DOCUMENT RESUME

ED 363 804		CE 065 135

TITLE	Industry Driven Skill Standards Systems in the United States. Volume III.
INSTITUTION	Institute for Educational Leadership, Washington, D.C.
SPONS AGENCY	Department of Education, Washington, DC.
PUB DATE	[93]
CONTRACT	VN92007001
NOTE	162p.; For related volumes, see CE 065 133-136.
PUB TYPE	Reports - Research/Technical (143)
EDRS PRICE	MF01/PC07 Plus Postage.
DESCRIPTORS	*Accreditation (Institutions); *Certification; Educational Research; Elementary Secondary Education; Industry; *Job Skills; *Labor Force Development; National Surveys; *Program Development; Program Implementation; School Business Relationship; *Standards; Vocational Education

ABSTRACT

This third volume in a four-volume study of industry- and education-driven skill standards in the United States and other countries contains information regarding industry driven credentialling and accreditation of programs. Section A includes descriptions of nine organizations involved in one or more components of skill standards/certification. They represent an emerging field with an emerging program; use of American National Standards Institute standards to drive the process and participation in worldwide certifications; certification only with no related educational activities; a program that has been developed to meet the needs of work-site training; organizations that have developed both occupational program certifications and individual certification systems, and two apprenticeship models. Section B is the inventory of organizations that shared information regarding their involvement with credentialling efforts. Programs are categorized into 24 occupational areas. Program information includes organization, address and telephone, contact, context, who is eligible, course of study required/prerequisites, levels of certification, how financed, who manages, standards setting process, occupational analysis, assessment process, maintaining and updating standards, partners, and information use. Section C contains a sample of accreditation organizations involved in the program approval process for specific occupations. Appendixes include summaries of the certification programs by industry and occupation and of occupations by industry category that are often licensed by the states. (YLB)

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INDUSTRY DRIVEN SKILL STANDARDS SYSTEMS IN THE UNITED STATES

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VOLUME III

THE INSTITUTE FOR EDUCATIONAL LEADERSHIP
Center for Workforce Development

CE 065 135

VOLUME III

INDUSTRY DRIVEN SKILL STANDARDS SYSTEMS IN THE UNITED STATES

Prepared for the U.S. Department of Education
Under contract by:

THE INSTITUTE FOR EDUCATIONAL LEADERSHIP

Joan L. Wills
Principal Investigator

This project has been funded with Federal funds from the U.S. Department of Education under contract number VN92007001. The content of this publication does not necessarily reflect the views or policies of the U.S. Department of Education nor does the mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.

Acknowledgements

This four volume study was conducted through the collaboration of four organizations. The Institute for Educational Leadership, Inc., The Center for Policy Research of the National Governor's Association, the Meridian Corporation, the National Vocational Technical Education Foundation of the National Association of Vocational Education.

Ms. Joan Wills, of the Institute for Educational Leadership served as the Principal Investigator for the project. She also had the lead responsibility for researching the industry based skill programs, providing an overview of the quality assurance organizations, preparing the case study of the United Kingdom, contributing to the case study of Australia, and providing the overview of other countries skill standards systems.

Evelyn Ganzglass and Martin Simon of the National Governors' Association contributed to the effort through review of materials and writing descriptions of industry based skill certification programs. In addition NGA shared with the study team the results of a companion study of nineteen states that are actively involved in the development of skills standards. Dr. Robert Sheets, a consultant to NGA conducted one of the in-depth studies of an industry based credentialling program and provided the case studies of Japan, Denmark and Germany. Mr. Larry Good, a consultant to NGA wrote the executive summary for the study.

Ed Davin of Meridian contributed by writing descriptions of industry based skill certification programs, Dr. Ronald Bird, of Meridian, had responsibility for organizing the information of industry skill standards programs to assess the extent of coverage of the programs within the total workforce. Dr. Eric Rice, of Meridian, had the lead responsibility for the literature search of job analysis and assessment issues, providing one of the case studies of an apprenticeship program, and the case study of Canada and Australia.

Ms. Madeline Hemmings of National Vocational Technical Foundation contributed the materials collected by the Foundation's fifty state survey of education driven skill standards initiatives as well as reviewing materials. Ms. Barbara Border, a consultant to NVTF, had the lead responsibility for preparing Volume II of the report, preparing the summary of chapter regarding education driven skill standard systems, providing the literature review of skill standards in the military, and the use of the DACUM type job analysis in education skill standard programs.

Each organization contributed technical support to the production of the Volumes and the study team is appreciative of the work of many people. A special thanks goes to Louise Clark of the Institute of Educational Leadership, without her help in numerous ways this project would not have been possible.

This four volume study of Industry and Education Driven Skill Standards Systems in the United States and Other Countries was prepared under the direction of Debra Nolan, Office of Vocational and Adult Education of the Department of Education.

Several persons were invited to review the manuscripts, often at the expense of their many other responsibilities. Their thoughtful comments and commitment to quality substantially contributed to this work. From the Office of Vocational and Adult Education they were: Joyce Cook, Howard Hjelm, Glenn Boerrigter, Jackie Friedrich, Mark Schwartz, and Carol Griffiths. From the Office of Planning, Budget, and Evaluation, David Goodwin. From the Office of Education Research and Innovation, Robert Morgan. From the Department of Labor, Michaela Meehan. From the National Occupational Information Coordinating Committee, James Woods and Pam Frugoli. From Aguirre International, Marilyn Silver and Sandra Smith.

TABLE OF CONTENTS

Acknowledgements i

Table of Contents iii

Introduction Page 1

Section A - Select Organizations History and Efforts Page 4

- Institute of Certified Records Managers (ICRM) Page 4
- Associated General Contractors of America (AGC) Page 6
- International Masonry Institute (IMI) Page 8
- National Joint Apprenticeship and Training Committee of the International Brotherhood of Electrical Workers (IBEW) and the National Electrical Contractors Association (NECA) Page 13
- American Welding Society (AWS) Page 16
- National Institute for Certification of Engineering Technologies (NICET) Page 20
- American Society for Quality Control Page 23
- National Institute for Automotive Service Excellence (ASE) and the partner organization, National Automotive Technicians Education Foundation, Inc. (NATEF) Page 28
- National Association of Printers and Lithographers (NAPL) Page 30

Section B - Inventory of Certification Programs Page 33

- Accounting Page 33
- Automotive Services Page 36
- Appraisals Page 38
- Communications Page 42
- Construction Page 43
- Electronics Page 45
- Engineering Page 46
- Financial Services Page 47
- Health Related Fields Page 51
- Heating and Cooling Page 66
- Hospitality Page 67
- Housing and Real Estate Page 69
- Information Management Page 74
- Insurance Page 74
- Investigations Page 76
- Management Services Page 77
- Manufacturing Page 82
- Printing Page 83
- Marine Page 85
- Safety Page 86
- Service Industries Page 90
- Veterinary and Related Services Page 95
- Recreation Related Services Page 97
- Miscellaneous Services Page 99

Section C - Accreditation Organizations Page 106

Appendix A - Surveyed Skills Certification Programs by Industry and Occupation Appendix A

Appendix B - Major Licensed Occupations by Industry Category Appendix B

INTRODUCTION

This Volume contains information regarding industry driven credentialling and accreditation of programs. The majority of material presented in this Volume has been made available to the study team by a request that organizations send "off the shelf" information. Some organization were very generous in providing a wealth of historical and contextual information regarding the parent trade association as well as information regarding the certification or accreditation program. This explains the variable length of material that is given regarding the organizations.

As was noted in Volume I the focus of this skills standards study is on those programs trade associations supported programs that self-reported in the *Encyclopedia of Associations* that they are involved in one fashion or another with credentialling or accrediting programs. Other organizations were identified over the course of the study from a variety of additional sources but there is no claim that all of the industry based organizations that are involved in skill certification programs are represented in this document. However, given the constraints of the study design, as well as time, what follows is probably the most comprehensive listing that has ever been developed.

Table 1 provides an estimate and overview of the number of workers covered by existing skills certification programs. The table combines information regarding number of workers derived from the OES, National Occupational Employment matrix, 1990 (Bureau of Labor Statistics, Occupational Projections and Training Data, 1992 Edition, Tables 6 & 7). The top number in each cell is the total number of certified Workers reported by the survey for programs associated with an industry or occupation group. The bottom number in each cell is the estimated number of workers employed in the industry and occupation according to the National Occupational Employment Matrix. Some of the certification programs identified by the survey did not report numbers of persons certified. A " + " in the upper line of the cell indicates that certification programs are active, but no estimated of certification numbers are available.

The table shows that the survey counted 1.1 million workers who hold certifications under one of the identified programs. This number represents just under 1 % of the total labor force. The largest number of estimated certified workers is concentrated in the Service Industry Sector. This large industry sector (40 million workers) includes subcategories of Business Services, Health Care, Engineering Services and Personal Services. The certification programs, not counting high-level professionals such as doctors and social workers, identified approximately a half million certified workers (497,813).

The table also identifies industry/occupation pairs where large numbers of workers are present but skill certification activity was found.

The remainder of this report is divided into the following sections. Section A includes in-depth descriptions of different types of organizations that are involved in one or more components of skill standards/certification. They were selected to show an array of approaches to the standard setting process.

There is a "buyer beware" story that bears telling. One of the original organizations that was selected for in-depth study provided an attractive feature that stated it offered five levels of certification for workers in occupations for technicians with education requirements ranging from less than a high school degree to an associate degree. Due to the fact that many of the certification programs do not focus directly on individuals at this level of education nor have what appear to be graduated levels of competencies within the occupation the study team thought further examination would be of value. The organization had responded to the general request to send off the shelf information. The materials did not contain a telephone number. The search included checking with the local phone company -- to no avail -- sending a registered letter -- to no avail -- and then checking with Secretary of State to ascertain whether or not the organization was registered in the state; we were told yes, but we have no current address for the group. Their story will not be told.

With the other organizations selected we did not uncover such a credibility gap. Each was selected for different reasons: an emerging field with an emerging program; the use of the ANSI standards to drive the process and participation in world-wide certifications; a large program that only offers certification and has no related educational activities; a program that has been developed to meet the needs of work-site training; organizations that have developed both occupational program certifications and individual certification systems; and two apprenticeship models. The purpose is to show range, differences in approach, history, and stages of development. They are not necessarily the "best" because there is no way to judge.

Section B of this Volume is the inventory of organizations that shared information regarding their involvement with credentialling efforts. The degree of detail and indeed the degree of involvement of the organizations in skills certification vary substantially due to the "off the shelf" nature of the material available from the organization.

Section C contains a representative sample of accreditation organizations that are involved in the program approval process for specific occupations.

Appendix A is a summary of the certification programs by industry and occupation.

Appendix B is a summary of occupations by industry category that are often licensed by the states. This material was used as a part of the synthesis discussion of industry driven skills programs in Volume I.

Table 1
Workers Covered by Skills Certification Programs

In each cell top number is number of identified certified workers and bottom number is total workers employed

Occupation Group	Industry											
	Agric.	Mining	Constr.	Manuf.	Transp	Comm.	Wholes. Trade	Retail Trade	Fin. Insur.& Real Estate	Serv.	Govt	Non specif	Total
Exec., Admin & Mgmt.	1,602 49,804	0 99,608	2,100 672,354	500 1,917,454	330 286,373	3,730 273,922	0 859,119	6,666 1,568,826	26,884 1,755,591	353,608 3,573,437	300 1,394,512	30,532	425,752 12,451,000
Professional Specialty	0 63,200	+ 63,200	0 31,600	+ 1,390,400	0 31,600	0 268,600	0 126,400	0 284,400	+ 221,200	100,150 11,628,800	5,000 1,690,600	6,500	111,650 15,800,000
Technicians	0 16,816	0 21,020	0 29,428	0 622,192	0 138,732	7,500 126,120	0 147,140	0 58,856	0 130,324	40,163 2,417,300	0 496,072	+	47,663 4,204,000
Marketing	0 28,176	0 14,088	0 70,440	0 704,400	0 211,320	0 126,792	+ 1,887,792	0 8,931,792	49,153 845,280	2,781 1,197,480	0 84,528		52,214 14,102,088
Admin support	0 87,804	0 87804	0 504,873	0 2,217,051	0 768,285	0 724,383	0 1,690,227	0 1,778,031	+ 3,556,062	3,340 7,858,458	0 2,678,022	53,108	56,448 21,951,000
Service	0 19,204	0 0	0 19,204	0 307,264	0 192,040	0 38,408	0 76,816	0 6,606,176	0 345,672	34,618 9,678,816	0 1,920,400		34,618 19,204,000
Agriculture	0 2,268,382	0 0	0 10,518	0 161,276	0 7,012	0 3,506	0 98,168	0 63,108	0 154,264	12,000 504,864	0 238,408		12,000 3,509,506
Precis.Prod. & Craft	0 56,496	0 296,604	205,510 3,050,784	+ 4,477,308	35,500 466,092	0 776,820	36,979 677,952	+ 1,242,912	0 268,356	50,293 1,737,252	0 1,087,548		328,282 14,138,124
Operators	0 120,715	0 206,940	0 1,258,885	48,500 8,777,705	+ 1,672,765	0 137,960	0 1,241,640	0 1,241,640	0 34,490	+ 1,914,195	0 655,310		48,500 17,262,245
Total	1,602 2,710,597	+ 789,264	207,610 5.648,086	49,000 20,575,050	35,830 3,774,219	11,230 2,476,511	37,259 6,805,254	6,666 21,775,741	76,034 7,311,239	596,953 41,008,415	5,300 10,245,400	90,140	1,117,127 122,573,000

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A. SELECT ORGANIZATIONS HISTORY AND EFFORTS

Organization: Institute of Certified Records Managers (ICRM)

Address and Telephone: Institute of Certified Records Managers Post Office Box 8188 Prairie Village KS, 66208 (800) 825-4276

Contact: Ms. Jenny N.Barker, President of Institute of Certified Records Managers (a volunteer)

Organization: Association of Records Managers & Administrators, Inc. (ARMA) 4200 Somerset Drive, Suite 215,Prairie Village, KS 66208 (913) 341-3808

Contact: James P. Souders, Executive Director ARMA

Context: ICRM is a non-profit independent certification organization of and for professional records managers established in 1975. It is composed of volunteers that give freely of their time to establish a meaningful set of credentials and standards for an occupation that cuts across all industrial sectors and is affected by rapid changes in technology. Over fifty percent of the current members of the governing Board of Regents were officially in the records management business 20 years ago. There are 600 active members of ICRM.

ICRM, like many credentialing bodies, works with and through other professional and trade associations, in order to solicit potential applicants as well as stay current with issues affecting the profession, such as shifts in technology. The individuals that are records managers enter the field from a wide array of educational and work experience backgrounds (see background on ARMA under Partners section to gain a perspective of industry mix.) ICRM is the designated credentialing body for two trade associations, ARMA and the Nuclear Information Records Management Association (NIRMA.)

Who is eligible: Only individuals proving professional work in three or more categories of records management (or teaching on a full time basis in records management) are eligible to apply for the program. The preferred applicant has a BA degree from an accredited college and three years work experience. It is possible to substitute work experience for the BA degree with a bare minimum requirement of a high school diploma and 11 years work experience.

Course of Study Required/Prerequisites: There is not a specific course of study required, however ICRM has developed a detailed outline that is, in effect, the statement of the body of knowledge required to become a certified individual. It has been reviewed annually but only altered once in the past 10 years.

Levels of Certification: There is only one level with a cerrtification maintenance requirement tied to accumulation of 100 "contact' hours of approved educational activites during each five year period (a contact hour is not equivalent to a C.E.U. hour). Approved activities include college/university courses, seminars/conferences, vendor courses/meeting with educational content/company-sponsored education courses/professional society/association activity that generates a tangible work product such as a workshop presentation. The organization is currently in the fifth year of the first five year cycle of the certification maintenance requirement.

How Financed: Applicants fee is $60 for application processing and $40 per exam (Parts 1-5) and $60 for Part 6. There is also an annual membership fee of $100.

Who Manages: The ICRM Board of Regents however, the organization contracts with ARMA for some administrative services.

Standards Setting Process: The standards for acceptance are considered to be knowledge in the mutliple subject matter. The standards were established over approximately a ten year period and were directly linked to the development of the exam. Representatives of educational institutions, consultants, various industries were involved in the committee(s) processes to gain agreement on the required detailed outline of what individuals needed to know. There was also an geographic and gender mix included in representation. What finally evolved was a six part test that constitutes the core component of the certification.

Occupational Analysis: This process has been directly linked to the standards setting process. Two people are responsible for developing questions for each part of the test and then the Committee as a whole meets twice a year to review all of the questions, finally the materials are reviewed by the total Board of Regents before being accepted as test bank items.

Assessment Process: The first step in certification is the documentation of required education and work experience. The application process requires proof of professional work experience in the field. A committee of the board has the sole responsibility to screen applications. These committees have found over time that the major problem at this stage of the process is that many worksites do not have job descriptions or the description does not adequately portray the functions being performed by the individual.

The second part of the assessment is the passage of the six part test. The first five parts consist of 100 multiple choice questions. Part 6 which cannot be taken until the others are passed, consists of case studies that require essay responses. (The organization is finding that recent graduates from college have a difficult time passing the last section.) The grading for this last part is done by several members of the association.

It is estimated that if all goes smoothly it would be possible to complete the total certification process in one year but normally it takes considerably more time and most individuals do not pass all of the sections in the first sitting.

Maintaining and Updating Standards: This is done through the development of new test items annually.

How is the Information Used: At this point in time there are no formal studies that have been done to track how members have benefitted from the designation.

Partners: As discussed earlier, ICRM has been designated by two associations as their official certifying organizations. NIRMA experience is illustrative of the types of negotiations that take place between such organizations. ICRM did not want to develop industry specific examinations instead preferring to promote a more general or occupationally focused certification program. NIRMA, through its own committee structure, reviewed the ICRM assessment criteria and reached the conclusion that what made their situation unique was the need to be familiar with nuclear regulatory codes. The result is that an additional section was developed in the test to deal with these regulatory requirements and other industry specific issues.

The other partner organization is ARMA that has 11,000 members worldwide. ARMA offers technical publications, a correspondence course, and it is recognized as an international standards setting organization by ANSI. Membership cuts across industry lines and in order to accommodate the industry specific needs there are industry clusters that have newsletters and special sessions at annual meetings etc. The industry clusters include: Banks and Farm Credit; Criminal Justice; Mineral Mining; Banking/Financial Services; Consultants; Health Care Services; Educators; Food, Beverage & Restaurants; Communications; Records Storage and Destruction Facilities; Government; State; Employment Contractors; Water and Waste Treatment Facilities; Environmental; Educational Institutions; Insurance; Petroleum; Merchandising-Retail; Sales/Vendors; Design; Engineering & Construction Firms; Municipal /County Government; Transportation; Non-Profit/Not for Profit; Manufacturing; Legal Services; Pharmaceutical; Utilities; and Federal Government.

ARMA's Professional Development committee has developed Guidelines for High School and College and University Awareness Programs. It has developed and subsequently revised a two year degree/diploma model program as well as a Bachelors degree model program. It maintains a directory of Collegiate Schools that shows the courses offered in a variety of departments within the colleges and universities. There is a small, but apparently growing number of two and four year degrees being offered in Records and Information Management. The two year degree model program requires a co-op ed work experience in the proposed curriculum and suggests textbooks and related material for use by instructors.

Organization: Associated General Contractors of America (AGC)
Address and Telephone: 1957 E Street,NW, Washington, DC (202)393-2040
Contact: John Heffner

Context: AGC has 100 local chapters and an extensive committee network. It is a key actor in the industry that employees more than five million people. AGC offers, as part of its many services, continuing education programs for construction managers and supervisors as well as oversight of the manpower and training needs of craft workers through two special committees dedicated to that purpose. These committees oversee an extensive network of activities: it sponsors student chapters on many college campuses, a scholarship program as well as joint apprenticeship training for the core trades -- carpenters, bricklayers, cement masons, millwrights, heavy equipment operators and construction craftworkers or laborers (this last trade is not apprenticeable).

AGC has also developed a certification program for craft workers for three trades; carpenters, bricklayers and stone masons. Since its inception in 1989 more than 2,300 craftworkers have registered for more than 5,600 tests by 1992. By 1991 31 states AGC organizations were sponsoring the certification program. The employment in the industry for these occupations is approximately 1.2 million.

The very creation of the certification program has not been without detractors. AGC, though a sponsor and major player in the management of joint labor/management apprenticeship programs, also sponsors what is referred to as unilateral (meaning no union involvement) apprenticeship programs and has worked with the vocational education community to establish school based programs (see Partners discussion below). These multiple initiatives have generated tensions between AGC and many of the unions. But they also reflect the unsettled state of affairs in a large and diverse industry regarding how skill standards are defined and how many levels of skills are needed for different purposes at a work site.

Who is eligible: Anyone who meets the following work and/or educational requirements: two years of verified construction experience; vo-tech school training plus one year of verified experience; or successful completion of a recognized apprenticeship, unilateral, or AGC recognized vocational education program.

Course of Study/Prerequisites: There is no absolute course of study required, however AGC provides a study guide.

Levels of Certification: There are eight occupational areas: Commercial Form, Frame, and Finish Carpentry; Residential Form, Frame, and Finish Carpentry; Brickmasonry; and Stonemasonry. The individual must pass a written test lasting one and one half hours with 50-90 questions per test. The certification is valid for five years. 1994 will be the first trigger of the recertification program.

How Financed: AGC underwrites the cost of the program, however there is a $15 registration fee and $15 cost for each test.

Occupational Analysis: AGC has contracted with the Oklahoma Dept. of Education to construct the duty task list (see Chapter 7 for detailed description of Oklahoma's approach. While there is no set time frame the duty task list are reviewed approximately every two to three years.

Assessment Processes: Again, the State Department of Education in Oklahoma is responsible for the test administration. It took five years to develop the criteria and methodology. The idea of a performance assessment was rejected early in the process simply due to the estimated cost at $200-300 per person.

Partners: The AGC provides an example of working with the secondary education system as well as the postsecondary to develop programs recognized by major sectors of the industry.

AGC, after over a decade of work, launched in 1987, a new initiative with the National Association of State Directors of Vocational Education to develop a standards based vocational education recognitions program. The program sets forth a fairly rigorous set of criteria a local program must use to be recognized and rewarded. There are standards in eight different areas, including: clear goals and objectives, recognition by an accredited institution, industry resources, administration, instructional material, instructional staff, facilities and equipment and learning resources.

This program emerged after a number of years of discussions and meetings between the two national organizations and it took a substantial negotiation to come to common agreement about what makes up a good program. Three programs were recognized in the first year, 51 programs were recognized in 1990, and as of February 1993 there were 213 programs accredited. It is growing slowly.

In a few states the directors of vocational education are sending out a very powerful message to local vocational education instructors and schools; it is a simple message. You have x number of years to qualify and be recognized through this program and if you do not there will be no funds forthcoming. Around a dozen states have aggressively pursued this alliance with industry. In the main, these are the states that have already moved to a competency-based occupational curriculum for the secondary vocational education curriculum but even within these states it is probably fair to say that neither state nor local school boards and other training institutions have seized upon this model to help them establish a systematic process to prepare individuals for the world of work.

Organization: International Masonry Institute (IMI)

Address and Telephone: 823 15th St. N.W., Washington D.C. 20006, (202) 783-3908

Contact: Jerry W. Browning, Director of Program Operations

Context: IMI manages the joint labor/management apprenticeship and training programs of the International Union of Bricklayers and Allied Craftsmen (BAC) and the signatory employers of the BAC members. The training includes instruction for bricklaying; tile-setting; plastering; mosaic work; terrazzo work stone; cement, and marble masonry; and pointing, cleaning, caulking. Specialty skills training is provided for: restoration work, ornamental plastering, panelization, refractory, stone carving and exterior installation.

The average age of the workers is around 55-56 years old; therefore, many of the master craftsmen are in their 50's and replacement of the current workforce is a part of the concern of IMI. The program serves the training needs of the 101,500 member union. Of that number 4,600 members are regular apprentices and almost 7,000 members are improvers or apprentices who have entered the system from other trades or the non-union sector. Approximately 75 percent of the 75,000 active members belong to locals who receive training through IMI each year.

Who is eligible: To be eligible for training, one must be a member of the BAC. Apprentices must be at least 17 years old and accepted into the apprenticeship program by the local Joint Apprenticeship and Training Committee. Journeymen are eligible to participate in any training as long as their local participants in IMI.

Course of Study/Prerequisites Required: The core apprenticeship program is three years long. Apprenticeship training includes a 12-week pre-job trade training session for new apprentices before they go to work and continues with additional related instruction throughout the term of apprenticeship. Journeymen advanced training is available to others in the system, not only to increase technical and trade skills, but also to provide the skills necessary to advance along the career path to other jobs such as foreman, estimator, instructor, and superintendent. Cross-branch training also is available for members who want to master a masonry craft beyond their individual trade. (See History Section)

Levels of Certification: The IMI Board of Trustees has reserved for itself the tasks of setting certification standards for each trade, craft level, and specialty. An attendance certificate is issued for participation in any training course; however, certification of competencies is reserved for the specialty skills, supervision, and instructor classifications, and only when the individual meets performance standards on work sample, portfolio and written assessments.

Formal certification as "journeyworker" is awarded to those who complete the apprenticeship program. Specialty certificates are awarded to those individuals who complete successfully the Instructor Development Program. Specialty certificates will be awarded in 1993 to those who complete the necessary training and assessment in Fireplace/Chimney Construction and Foremanship. Certification programs are planned in welding, basin construction, rigging and other specialty topics.

How Financed: Funding to support the training program of the Masonry Institute was initiated in 1989 based on 1% of wages for each hour worked. Funding for the total IMI program is set at 3% of wages with each division--training, promotion, and marketing--receiving a third. The initial contribution can be established on a graduated scale with reduced contributions and services for less than full contribution. Then, over several years, the local can move to full contribution with provided services expanding as the contribution rate grows. Of course locals can join at the full contribution level, but sometimes that is difficult to accomplish until a new collective bargaining agreement is negotiated. In such situations, locals are permitted to use funds that have been accumulated previously in local training trusts to "buy" their way to full contribution until a new collective bargaining agreement is negotiated.

History: IMI itself reflects the changing reality of the crafts. It represents the pulling together of what were previously separate unions and separate local apprenticeship programs into one. IMI was established in 1974; up until the early 1980's, its primary source of funds was Department of Labor grants that enabled IMI to provide pre-apprenticeship training and trade training through Job Corps centers. The support for the traditional apprenticeship programs was available only through general fund allocations from member dues. The base was small; services were limited; and training always was "out of sync" with the business cycle.

Beginning in 1985, representatives of the union, contractors, the IMI Apprenticeship and Training Program Board, and adult educators launched a three year study to develop a new apprenticeship and training strategy.

This study included reviews of apprenticeship systems in other countries: Germany, England, Italy and France. The study also investigated training in the U.S. and Canada through meetings with trade officials, government officials, contractors, and union members. In addition, project staff consulted with adult training experts, visited a wide variety of programs and read extensively. What emerged was a plan geared towards the 1990's and beyond. In many ways it is a totally new beginning.

A Master Plan was developed that expressed strongly the rationale for change:

> In spite of past successes with apprentices, the changing demands of the marketplace have made the present system for training masonry craftworkers too narrowly focused, fragmented, non-uniform and under-funded. For example, training has focused almost exclusively on individuals who are beginning to learn the trade. Additionally, almost all craft training has been organized by local jurisdictions without industry-wide coordination; no standards for training content exist aside from the state and U.S. DOL minimum hour standards. Finally, the local basis for funding has made it difficult for small jurisdictions to support good quality training, or in some cases, any training. Training has not ensured or

> expanded work opportunities for individuals, nor has it refilled the ranks of skilled craftworkers needed for future industry growth. The system simply has been inadequate for the industry. Pre-job training for apprentices rarely has been provided; little systematic training has been available beyond the traditional apprenticeship. The smaller crafts have had inadequate related training, and no training has been available for specialty skills. Journeymen in one branch of the trade have had few opportunities to receive training in other branches of masonry. Supervisors and craft instructors have had to go outside the industry for professional training.

This description of the conditions led them to devise the following integrated training system that is still unfolding.

Training Levels and Crafts

- Apprenticeship
- Pre-Job
- Advanced Craft
- Supervisor
- Crew Boss
- Foreman
- Superintendent

- Journeyman
- Advanced Craft
- Specialty Skills
- Cross-Branch
- Instructor
- JATC Administrator

The pre-job training is twelve weeks long. Of the 480 hours of training, 30% is devoted to classroom instruction and 70% to practical skills. Loans for participants are available, if needed, for living expenses; travel stipends are provided. The cost runs between $1,800 and $2,500 per trainee. Enrollees must be recommended by the local Joint Apprenticeship Training Committee that controls the entry standards to the Apprenticeship Program.

Training sites have been consolidated into a series of regional and satellite centers. Permanent, full-time instructors teach the trade skills and related knowledge, and maintain high standards of training quality. In general, the following types of training are offered at the various locations.

International Center	**Regional Center**	**Satellite Center**
Instructor	Apprentice pre-job	Apprentice pre-job
Supervisor	Advanced Craft	Advanced Craft
JATC Administrator	Cross-Branch	Cross-Specialty Skills
Specialty Skills		Specialty Skills
Advanced Craft	Supervisor	Supervisor
	Related & Support	Related & Support
	Literacy	Literacy

The structure of the training system is designed to provide a set of career paths that can lead to master mason, multi-craft training, supervisory positions or instructor training. Additional training, not provided in the IMI system, is available to members through the Tuition Reimbursement Program. Members can be reimbursed up to $200 of tuition and fees per semester for college course work that they complete successfully at an accredited institution. Members also can pursue an Associate Degree program for trade course work, including apprenticeship training, through an arrangement with Lane Community College. Work continues on arranging for additional college credit for life experiences and advanced trade training.

Standard Setting Process: Standards have been established by the Program Board of the IMI Apprenticeship and Training Program. The Program Board is composed of 20 members, 50 percent of whom are contractors and 50 percent of whom are union members or officials. The Program Board meets two times per year to discuss, design, and approve all components of the training program, including setting standards. Subcommittees of the Program Board are formed from among Board members and others appointed from within the IMI system to investigate standards and to serve as the National Joint Apprenticeship committees for the different trades. For example, one subcommittee that recently has completed work on the tile standards was composed of fourteen people -- equal numbers of union officials and contractors, plus two adult educators. The committee met three times over a year to create the revised Tile Setter and Tile Finisher Standards. They worked from staff-prepared information that included not only the old standards, but also a Job-Task Inventory generated through an extended Search of the literature and work analysis/observation by a trained specialist. The Committee prioritized work processes and related subject topics through the Nominal Group Process; then by voting, they established the list of required processes, required training topics, and required hours of necessary experience.

Standards for certification programs other than apprenticeship also are established under the guidance of the Program Board and by using subcommittees of union members, contractors and adult educators. The committees work from industry and published information and add to it through the experience of journeyworkers and trade specialists. For example, the Instructor Certification Committee is made up of three tradesmen and three adult educators. They work to recommend standards to the Program Board from composites of necessary skills from research on adult training and instruction, state teacher education certificate requirements, curricula on the teaching of adults, and draft instructor certification guidelines prepared by staff. The Certification Committee also reviews the portfolios that instructors prepare as part of the certification effort; they recommend action on individual instructor certification to the Board of Trustees.

Instructional Issues: Several issues have helped to define IMI's training system design -- the hard physical nature of the trade; the day-to-day mobility of the work force; the relatively small size of contractors; the training preferences of the members; previous experiences of the membership with formal education; and the actual tasks that members must perform at work.

With those problems as background, and using emerging research evidence on adult learning, IMI designed a training system for apprentices and journeyworkers with the following characteristics: First, the training was designed to be offered in context, rather than simply in traditional classrooms. Context often means creating a training and learning situation where apprentices participate in simulated or actual job tasks under simulated, closely replicated job conditions with appropriate instruction from a trained craftsman. The mock-up system is particularly suited to facilitating this type of training. The system uses "mock-ups" or replications of job operations and requires the apprentice to work through the situations, enacting job tasks and mastering job skills. Not only does it allow the apprentice to participate...to learn while doing in a situation highly similar to what the person will encounter on the job, but also the mock-up system (and learning in context) means that the person begins with rudimentary skills and, upon mastering them, moves to successively more difficult skill operations.

The mock-up system also involves participants in active learning because apprentices participate in building projects. They learn while doing and must reflect upon their actions to understand what they have done correctly and to modify what they have done incorrectly. No longer can the apprentice simply be a passive pupil sitting at a desk.

Usually the mock-up system is used in the pre-job context. Apprentices master basic skills before going on the job as a means of promoting productivity and safety. However, the system can be applied at all levels of jobs throughout an industry, and is used for cross-branch training.

Active learning in context for the IMI system also means attempting to stimulate and replicate other job-related elements into the training situation. Among the elements that can contribute to this process are the following:

1. Create competency-based lessons that reflect the demands and expectations of the workplace and convey specific performance expectations to trainees. Group the various competencies into clusters that are associated with job-specific tasks and build manageably sized learning activities around the tasks;
2. Give "tests" that measure job-specific criteria such as performance quality, production rates, safety, customer satisfaction, and manufacturer's specifications;
3. Emphasize demonstrations, performance modeling and instructor-supervisor coaching as the primary means of conveying information;
4. Emphasize quality and productivity by applying limited (reasonable) pressure on apprentices to perform tasks correctly and in reasonable amounts of time -- as determined by industry standards.
5. Encourage trainees to work in teams to complete learning activities. Strive to pair more-experienced and less-experienced apprentices together;
6. Design learning tasks so they reflect and reinforce work tasks. Include basic skills and employability skills in the same process;
7. Structure lessons so that trainees learn-by-doing. Make classroom time support learning-by-doing tasks rather than the reverse;
8. Generate/sustain instruction patterns between instructor and apprentices that mimic those of the work site in formality, expectation and discipline;

9. Use written materials from the work site (manuals, installation instructions, safety materials, forms, and so forth) as part of the content for basic skills and occupational skills instruction;

10. Incorporate mediated materials into the training;

11. Allow open-entry/open-exit within the mock-up system so apprentices can move through at their own pace.

Instructor training and other Journeyman Advanced training also uses a combination of hands-on experience, coaching and classroom instruction to enable workers to learn by doing. As with the content of pre-job training, the content of journeyman advanced training is derived through joint labor-management activities, with assistance from adult educators. In addition, published industry, government, and research information is incorporated into the design. The design for each specialty certification is created by the Program Board and is implemented by the Curriculum Committee comprised of eight instructors, journeymen, and adult educators. The Committee meets to provide guidance, specification and approval of developed materials.

Assessment Process: Several types of assessment are used in the training system as described elsewhere in this document. One type of assessment is the ability to hold a job to earn a living and work the hours in the trade practices required to advance through apprenticeship to journeyworker status. A second type of assessment is the assessment of trade skill practices on various job tasks as taught during the hands-on portions of pre-job training. These skills are judged on a scale according to how much supervision and assistance is needed for an apprentice to complete the task to industry requirements. A third type of assessment is the portfolio assessment of products and techniques required to achieve certification in Instruction Training. A fourth type of assessment is successful completion of written exams together with hands-on skills demonstration as is required in the specialty skills. IMI continues to work on a fifth type of assessment; during 1993, they are developing a pilot work-sample performance test for tile setting as a way to certify skills.

Maintaining and Updating: Standards are revisited every few years, but not on a fixed schedule; rather, new technology, competition, contractors moving into new markets, government regulation, and new materials each can stimulate a revisit of standards.

How is the Information Used: IMI shares its national apprenticeship standards with BAC locals throughout North America and registers them with the Bureau of Apprenticeship as well as Provincial governments. Standards for specialty programs are shared with industry representatives who request them, with educational institutions that may be evaluating a member's training for credit, and with government agencies. (However, curriculum materials and assessment procedures, to the extent that they were developed by using collectively bargained funds, are treated as proprietary information.)

Organization: National Joint Apprenticeship and Training Committee of the International Brotherhood of Electrical Workers (IBEW) and the National Electrical Contractors Association (NECA).

Addresses and Telephones: IBEW 1125 15th St N.W. Washington D.C. 20005,

(202) 833-7000 NECA 3 Bethesda Metro Center, Suite 1100, Bethesda Metro Center,Bethesda, MD 20814, (301) 657-3110 NJATC 16201 Trade Zone Ave., Suite 105, Upper Marlboro, Md 20772, (301) 249-2042

Contacts: A.J. Pearson Executive Director, National Joint Apprenticeship and Training Committee for the Electrical Industry; John M. Grau, Executive Vice President, NECA

Context: Electrical construction companies total over 50,000 and employ over a half a millon workers generating over $90 billion annually. NECA has been representing Electrical Contractors since 1901; members come from an estimated 9,000 firms and it has 127 affiliated autonomous local chapters.

IBEW joined with NECA in 1941 to establish a national network of joint training programs. In the area of training they jointly expend $40 million a year for training through 316 local programs. Currently there are over 51,000 individuals in apprenticeship and journeymen programs and over 200,000 individuals have become fully trained electricians.

Who is eligible: Applicants must have a high school diploma or a GED, have at least one year of algebra, provide transcripts of all their grades, have qualifying scores on the GATB (administered by the Job Service) and in about half of the programs must be able to pass a drug screening test. (Acceptance of a GED has not always been allowed and the average years of education for a person accepted into the program is 13.5 years of schooling.)

Course of Study/Prerequisites: The national Joint Committee maintains and updates annually a national curriculum for use by local affiliates that includes a set of standardized tests given at the end of each period of related instruction.

There are two basic programs: one for residential wiremen that is a two year, 4000 hour program (the inside wireman) and the outside lineman that is 8,000 hours of on-the-job training.

The latter program went from a required four year to a five year program in the late 1980's. There were two key reasons for this expansion. The first was the increasing problem of poor math skills of the new apprentices (not unlike the problems faced by entrants into colleges) and the second was the technology changes in the industry requiring more training.

About 85% of the initial apprentices complete the program. Within the 15% that do not complete, about one half are dropped due to not maintaining the standards of the program (mostly disciplinary issues) and about 10 % or so just drop out.

Levels of certification: There is officially only the journeyman designation. Through the Joint Committee this is one of the few national programs that independently issues certificates to apprentices but these are not given out unless the individuals has passed the series of national benchmark tests throughout the program.

There has been a substantial growth of continual training for journeymen in the past five years. Approximately 20,000 individuals a year are participating in one or more of the 40 upgrade courses and 20 more courses are in development that range from four hours to 16 semester hours courses.

Who manages: Joint Committees at national and local levels with the IBEW having the primary administrative and daily management responsibilities.

How financed: The primary source of the funds comes from the two sponsoring organizations to support the national program efforts and at the local level through a self-imposed training levy that varies by local collective bargaining agreement. The national funds are spent on curriculum development and other training material, instructor training, development and updating of the standards and tests.

Partners: NECA works with the American Council for Construction Education, an accrediting organization whose function is to develop college level curricula geared towards careers in construction management and related fields. There are also ties to Arizona State University's Office of Electrical Construction that is a recognized leader in research, development and technology transfer within the construction industry.

Another partner is the Construction Labor Research Council that is an independent organization supported by NECA and industry associations that conducts a variety of research projects for the industry as a whole including a substantial amount of labor supply and demand analysis.

Standard Setting Process: IBEW and NECA, in partnership with the Independent Contractors Association, are recipients of a DOL skill standards grant. This effort will assess the total industry requirements for occupations ranging from initial entry, progression levels, and functional craft levels. It will assess the adequacy of and validate the application of competency and performance based criteria currently in use, and benchmark standards to international standards. It will also review a range of processes for the development and continual upgrade of standards and curriculum as well as undertake tasks to promote transferability.

Occupational Analysis: The last major job analysis was conducted in the mid 1970's and focused predominately on the needs of the initial preparation period. The new standards setting analysis will be considerably more inclusive but it will still not deal with all occupations in the industry since its focus will be on craftworkers.

Currently, they use the Dacum process in the development of their courses. The initial work starts with a 12 member committee composed of craftworkers, managers, supervisors, trainers. The work of this committee is reviewed by about 50 of the 316 programs that exist throughout the country prior to final curriculum being developed. National standard codes are used in the curriculum.

Assessment: There are 12 tests related to the content of the curriculum that are administered (criterion referenced). The test items are changed every year. There are also on-the-job standards related to productivity, attitude, and timeliness that are to be filled out at the work site. This is an area the Joint Committee is trying to strengthen in several ways because they have found that all too often the entire management structure at the work site level treats the documentation of all of these efforts too casually.

Instruction Related Issues: For the Joint Committee, the University of Tennessee's Department of Technological and Adult Education has been providing instructor training for four years. It is a summer program that lasts a week each year, costs $325 per person and that each instructor will attend for four summers. The local program normally pays the fees and expenses of the trainees including the wages while the person is in attendance. The national staff is convinced this training of the instructors is one of the most important quality assurance components of the entire system.

The U of T is currently involved in skills standard research in several major industrialized countries and will be assisting Great Britain in the writing of construction skill standards for that country.

Maintaining and Updating Issues: Because of the annual development of new curriculum and test revision, updating is not a substantial issue.

Organization: American Welding Society (AWS)
Address and Telephone: 550 NW Lejeune Rd. PO Box 351040, Miami, FL 33135, (305) 443-9353
Contact: Dr. Nelson C. Wall, Executive Deputy Director

Context: AWS was founded in 1919 to advance the science, technology and application of welding. It has 42,000 members with an annual budget of over $12 million. AWS is a part of the ANSI network. It has the responsibilities for establishing standard welding terms and definitions; scientific standards for content of materials; developing the standards for welding and other procedures such as brazing; establishing the structural codes for a range of materials and forms of welding such as bridge, underwater welding and earthmoving equipment.

As a member of the International Institute of Welding (IWW) AWS works to provide documents which satisfy the needs, defines the requirements for, and develops the standards and writes the tests for the certification of welding inspectors, welders, and welding educators. They are currently taking the lead responsibility for IWW to establish nine different classification levels for the ISO's , soon to be announced, certification system. Mexico, Japan, Korea, Bahrain, Saudi Arabia, Singapore, Brazil, Taiwan and the United Arab Emirates all have standing contracts with AWS to hold annual CWI Training and Certification tests in their countries.

There is a logical linkage between the product standard setting functions and the individual skill certification programs. The objective of the AWS Welding Inspector Certification (CWI) program is to determine the knowledge of welding inspectors who may be required to inspect weldments or welded products in accordance with codes or other specified requirements.

The range of the industries being covered by the system is extensive. In this country, it includes steel fabricators, shipbuilding, aerospace, automobile, railroad, mining, structural steel, and petrochemical to mention a few. It is estimated that, pending 1992 Census data, that there are some 600,000 welders in the country.

The program began in 1976. There are now over 17,000 registered inspectors. In the past three years the Society has established its own AWS Standards and Certification for Welders, Welder Instructors and an accreditation of test facilities for the AWS certified Welder programs.

History: The concerns regarding the need for quality assurance standards and systems grew out of the Bureau of Shipping during WW II. The Bureau was the first place to identify the need for standards to determine an acceptable weld. State highway departments were also becoming increasingly concerned regarding the standards to determine the welding on bridges.

Due to these concerns the volunteer leadership of AWS moved to underwrite the development cost for a certification system in the early 1970's. The organization still covers a portion of the cost for maintaining the system.

Partners: The principal volunteer group to guide this system is the AWS Qualification and Certification Committee (Q&C). The Board of Directors assigned this committee the task of regulating the system and reviewing complaints. All the key partners were involved in the development of the system including educational institutions, industry representatives and end users (employers). They cooperated with the AWS's Education Committee in the development of the training programs for applicants for the qualification examination.

Who is eligible: For the CWI: Applicant with a high school diploma or a GED must be able to document two years of qualifying work experience or a maximum of two years of post high school education may be substituted for an equal number of years of the required five years provided the experience is relevant to any welding function. An applicant without a high school diploma or GED must have at least an 8th grade education and not less than 10 years of work experience or if, less than an 8th grade education 15 years of experience.

Course of Study/Prerequisites: When the Inspectors Certification program was conceived a training program was developed to provide the educational component. Seminars last for five days/8 hours a day and cover codes, welding inspection technology, and visual inspection instruments and measurements. On average this seminar is offered not less than 40 times a year. However, participation in the seminars is not a requirement to take the test.

The qualifying work experience must include direct involvement with weldments, inspecting weldments, preparing plans and drawings for weldment construction, or planning and control of materials, procedures and operation for weldment fabrication. All work must be accomplished to a recognized code and specifying a company standard or specification is not acceptable unless AWS is provided beforehand with a copy of the nationally recognized code, standard, or specification which served as the basis for the document.

Levels of Certification: For the Inspector there are currently two levels, assistant and inspector. However, in order to be in compliance with the ISO standards a third tier at the master level will soon be established.

For the welder there are currently seven different levels and by the end of 1993 there will be 40 different tests for welders (again for compliance with ISO.) These forty different tests will be grouped by families or types of materials and welding techniques. There is only one level for the certified educator.

The individual seeking certification for inspector must pass a three part test (fundamentals, open book code and practical application), each lasting two hours as well as pass an eye exam. The candidate must obtain a score of 72% or better in each of the three parts of the tests to be certified.

The certifications last for nine years and then the individual must be retested in order to ascertain they have kept up with the technologies. There is a renewal requirement every three years that requires documentation that individual has been practicing in the trade a given percentage of time. All of this material for each individual is maintained in the AWS's registry.

How Financed: There is a minimum fee of $300 dollars for taking the exams. However this does not cover the total cost of maintaining the system which is subsidized by AWS. The AWS has been able to bear these developmental cost due to the income generated by the sale of product codes and other publications as well as being the sponsor of the worlds largest trade show for the welding industry. There would be no way they could afford to subsidize the certification programs if they were totally dependent upon individual fees or private firm's contributions.

Standard Setting Process: All standards of AWS have been developed in accordance with the rules of ANSI.

In a summary format AWS uses the following outline in the development of any certification program.

Outline of Tasks

- Determination of the needs through industrial and educational surveys.
- Preparation of Standards.
- Preparation of certification information and test.
- Development of test bank.
- Certification of individual.
- Development of skill update method.
- Development and maintenance of skill and certification data base.
- Marketing of program, dissemination and distribution.

The time required to establish an individual program may vary from one to several years, depending on how broad the scope of the program and the availability of staff time.

Three years is estimated as a reasonable average time to develop a certification program. A total investment on the order of $750,000 over this period of time is required.

Occupational Analysis: Over the years AWS has found the most efficacious approach is to use the DACUM technique to determine the job requirements. It has given them the capacity to define the general knowledge and skills required, the working traits and attitudes needed and the recommended tools, equipment, supplies and materials. Through this process they call upon many of their partners (several different unions, employers, etc.)

Assessment: The welding inspector's test is six hours in duration and is entirely conducted in a classroom, including the performance assessment of different types of welds.

For the welders the test is predominately proving they are able to weld different materials to a set of specifications. For AWS this has meant it was necessary to have laboratories in convenient locations around the country. Therefore, AWS had to develop a certification of the laboratories, who charge fees that are often covered by the companies. Some union apprenticeship training sites have been certified as test sites by AWS.

Instructional Issues: The certification program for instructors is specifically targeted to educators in the vocational education system. In one state, Florida, all vocational instructors in welding must be AWS certified.

AWS has been concerned for a number of years about the quality of welding instructors in the public education system and is currently involved in assisting those they have certified in the establishment of their own private

non-profit, the International Society of Welding Instructors.

The tasks of developing a curriculum for training of the instructors includes the subject of developing a student curricula. In developing these tasks AWS first had to determine the minimum expected skill level and then mold the course content and tailor it so that it would prepare the instructors with the appropriate technology, understanding and teaching methods. It was necessary to develop the methods for determining and developing the student training requirements first. It was then possible to provide the program with the instructor curriculum policies and procedures later used in developing other certification programs.

AWS recognized that the level of proficiency of instructors interested in participating in the Training Certification program would vary widely. For this reason, the development of the curriculum must be a flexible process. A set of curriculum modules were developed which could be selected to train an individual who had little prior knowledge, or to merely update a highly skilled individual with the newest available technology.

Two cycles of Beta testing of the instructor training curriculum were conducted in order to identify procedural weaknesses, correct and refine the curriculum, and retest it. The same process was used in the development of the student curriculum.

Parallel to the curriculum development the certification requirements and tests were developed allowing the program team to be consistent in providing training and testing of the identified needs coming out of the DACUM.

Maintenance and Updating Standards: The ANSI procedures are clear; any standard is subject to revision at any time by the organization that developed it, but it must be reviewed every five years, and if not revised, it must be either reapproved or withdrawn. At AWS, the method used is as follows:

- Identification of important new technologies.
- Identification of level of emphasis needed.
- Suggested balance between new and older technology.
- Methods of integration.
- Recertification in a defined time cycle.

How is Information Used: There are multiple uses of the information. However,the most important is assuring the maintenance of the records for individuals certified since it directly relates to their livelihood. The information for each individual is housed in three places: the current data base, on film, and in a vault.

Once developed, the certification and education program were promoted using brochures that explained the system and benefits to the user and their organizations. A marketing plan was directed to: industry, accreditation organizations, boards of educations, government agencies, and the general public. Associations such as VICA and state directors of vocational education were specifically targeted.

Organization: National Institute for Certification of Engineering Technologies (NICET)
Address and Telephone: 1420 King St. Alexandria, VA 22314 (703) 684-2835
Contact: John Antrim, General Manager

Context: NICET is sponsored by the National Society of Professional Engineers and was formed in 1981 when two separate certifications organizations originally formed in 1961 and 1977 merged. The institute is not a membership organization but strictly an examining body with the goal of supporting a viable career path for engineering technicians and technologists. The NICET's eight member board of governors is drawn from the following: three must be NSPE members and four must be drawn from the NICET certified community and one must represent the public.

Most of the certification programs are in specialty areas of civil engineering and a number of state Department's of Transportation require their certificates in their project specifications. Also regulatory bodies such as those concerned with fire protection will often require the certification. Some firms use the certification of their workers as a part of their promotional materials when preparing proposals and individuals have found it useful for getting hired or promotion. Technician certificates number 82,289 at the end of 1992. The technologist certificate has only been issued to 853 individuals in the last 15 years.

Partners: The certification programs are developed and maintained via volunteers from their customers -- certficants, employers and regulators. They work with a variety of trade associations, professional societies and several highway related organizations, including the Federal Highway Administration.

For those certified, the Institute's material urges them to join professional associations and mentions specifically the American Society of Certified Engineering Technicians.

They have a cooperative agreement with the Instrument Society of America that has its own set of certified specialist programs for analytical and/or measurement technology. ISA recognizes the NICET technician in instrument technology.

The NICET general exams are being used in a number of engineering technology associate degree programs in Tennessee to meet the accountability requirements for the educational institutions in the state.

History: The initiative started in the 1960's as a "do-gooder" effort on the part of the professional engineering community. Initially most sought certification for the prestige factor but increasingly the certification is becoming a condition of employment, particularly in some specialties such as highway related fields and fire protection fields. They started with only biographical materials and levels of experience, then moved to testing broad based technicians areas and learned through experience that it was essential to develop specialty certifications.

The staff of NICET does not believe it is feasible or necessary to certify all of those involved in engineering technology work in all work site settings. Also, considerably more work would be needed to generate agreement about what national standards would need to be in some specialties. For example, because there is little agreement within the community of water supply and sewage treatment providers regarding standard methods, it makes it difficult to get consensus on a nationally applicable body of knowledge for these workers. NICET has a highly automated system and can generate a score report based on totally different individualized exams in a 10 day period. There are also plans to develop computerized simulation assessments when the cost of the hardware and software make this feasible. The entire operation is managed by a staff of 15 people.

Who is eligible: For the technologist, until exams are fully developed, a Bachelors degree in an engineering technology program recognized by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology. The technician certifications are not dependent upon educational qualifications. Both require personal recommendations.

Course of Study/Prerequisites: No explicit course of study is required except that noted above however, clearly study and experience is necessary in order to pass the technician certification examinations.

The Institute does not provide any curriculum materials or instruction; study guides are available but the Institute suggests the use of any good textbook will help the applicant.

Levels of Certification: For the technologist there are two levels; associate and certified, the latter requires at least five years of experience.

For the technicians work experience is evaluated but it is not strictly a seniority system, rather "relevancy criteria" are applied including military or craft work. This is, however reviewed after the passage of the written exam.

There are four levels of certification that progress from entry-level (skills acquired in the first few weeks of working on a job); level 2 (positions that would be narrow in scope in the first two years while proficiency in all of the work elements is achieved). Level 3 requires approximately five years of experience and Level 4, almost 10 years of experience including supervisory work.

The number of job task competencies exams are continuing to expand. Currently operational are programs in (some with two or more sub-fields): construction materials testing, engineering model, fire protection, geotechnical, industrial instrumentation, land management and water control, mechanical, transportation, and underground utilities. Others targeted for completion in 1991 and beyond include electrical power, building construction and additional sub-fields in mechanical, building construction, computer, telecommunications, hydro, highway bridge design.

NICET is moving away from just maintaining a registry of those who passed the certification program to a recertification procedure starting in 1994 that will be on a five year cycle that will include professional development requirements.

How Financed: Only user fees. In 1992 the two main sources were a $20 annual renewal fee and an exam fee of $75.

Occupational Analysis: Unlike most organizations, NICET does not hire outside testing services to assist in the analysis of jobs or develop the items for exams. Voluntary technical advisory committees are used to identify and describe job task competencies for functional fields. Committees are composed of five to 10 technical and administrative persons familiar with the technical fields. Contributions come from the engineering practitioners in education and industry. The initial task of a committee is to draw upon resources such as company position descriptions, company task analyses, personal experiences and knowledge.

Committees are responsible for specific content and structure of the testing program, they write exam questions as well as solicit from others, they monitor the process and verify answers to examination questions. Work elements are eventually organized into a matrix after having undergone several iterations where the need and the scope is debated by the committee. Questions related to the four levels of certification are identified within the matrix.

Approximately 25 industry representatives then review the materials, adjustments are made and then another revised draft is sent to over 100 public and private organizations for comment. User types and geographic coverage is assured throughout the process.

Validation is dealt with by pilot testing of the written examinations with employer type and geographic coverage addressed. Fifty or more voluntary examinees is the goal for each work element.

The modules are at the core of the whole system. An applicant can select among a number of work elements (stand alone modules) at each level and it is not unusual for an examinee to initially avoid some of the tougher work elements (e.g. math.) However, in order to move on to the higher levels it is not possible to avoid passage of work elements that contain a substantive amount of math.

NICET is in the process of developing "generic" work elements in the areas of communications, mathematics, and science which will be treated as "crossover" work elements among almost all of the certification programs. Every effort is made to identify work elements in a sub-field that are identical or virtually identical in coverage and intent to work elements in one or more other fields/sub-fields. Crossover work elements within the same technical field which are passed on an examination are automatically credited to all sub-fields within that field.

Assessment Issues: Assessments are written multiple choice exams and are all open book. For the technicians there are two different exam systems; 1) a job task competency certification program which uses work element examinations in the specialty areas and 2) the general knowledge certification exam which is being phased out.

Open book testing was adopted purposely because technicians are expected to consult procedural manuals, compilations of standards, and other references while on the job and the testing is intended to establish if they know how to do their job properly.

Employers prefer the work element exam and therefore for the last ten years test development has only occurred in the specialty areas.

Test are administered in more than 110 educational institutions around the country and take a full day. To advance from the entry-level certification to the senior level normally requires four exam sittings.

They determined performance assessment to be too expensive and went with a reasonably successful verification process that must be provided by the applicant's immediate supervisor. This individual must signify the applicant has actually performed at least the operations indicated in the work element description and that the verifier is confident that the applicant has performed the specific job tasks repeatedly and satisfactorily. Partial involvement in the completion of the task is not considered appropriate. The materials carry a warning that this verification process is considered as an important component of the entire certification process. If there is an abuse certification can be permanently denied.

They are one, perhaps the only, certification organization that is a true third party evaluation organization. They do not develop or promote any training and or education materials. And they are not linked to any discipline oriented membership organization.

Maintaining and Updating: The tests are constantly updated through the development of new test items. However, NICET is convening in 1993 a highway construction advisory panel to review current program and to address forthcoming changes in roadway construction methods and the role of the engineering technicians as a member of the construction workforce.

This review will address regional variations in construction methods and materials used and what these variations mean for nationally applicable standards. They have also identified, through experience, that it may be necessary to differentiate even more than is now the case for differing job situations such as, bridge versus roadway construction, field versus office activities, employer types (contractor, subcontractor, consultant, public agencies), employee categories (construction worker, project manager, quality control technician, project superintendent), urban versus rural roadways and local street versus arterial versus controlled access freeway, new construction versus rehabilitation versus reconstruction, english versus metric measurement systems, and other issues. The organization relies, it believes successfully, on its customers to keep it informed on changes of methods and practice in the field.

How is Information Used: The NICET certification program development process, because it uses representatives from its customers (employers, certificants, regulators), produces an acceptable program for everyone rather than a program that is developed to serve the needs of a single interest group and accordingly the identified nationally applicable job tasks are defining for the first time the body of knowledge for specific technicians. This defined body of knowledge than gets used by others to set hiring qualifications or develop training programs.

Because the organization is highly automated they have not had any substantial issues in terms of being able to keep track of individuals within the registry. Also, they are able to provide education institutions, employers and industry groups with comparative data on how examines succeed on the exams.

Organization: American Society for Quality Control
Address and Telephone: 631 East Wisconsin Ave. PO Box 3005, Milwaukee, Wisconsin (414) 765-7206

Contact: Sally Harthun

Context: The American Society for Quality Control (ASQC) is an international professional association for quality practitioners. It is the largest professional association for quality practitioners in the United States with approximately 110,000 members in over 300 local sections or chapters in all the states. The ASQC also has chapters in Japan, Mexico, and Canada and affiliate associations in Europe, Japan, and 19 other foreign countries.

The ASQC has been instrumental in promoting national and international quality standards in the United States through its role in the development and dissemination of the ANSI/ASQC Q90 series. This series is the American equivalent to the ISO 9000 standards series. The ASQC administers the Technical Advisory Group for the United States on behalf of ANSI. This group provides input into the ISO technical committee for quality assurance standards. The ASQC also publishes and disseminates the ANSI/ASQC Q90 series.

In 1966, the ASQC established its first certification program for Quality Engineers. The ASQC established this program to promote professional recognition for quality engineers. ASQC members urged the establishment of this certification program because there were no widely-recognized postsecondary degree programs and other forms of credentialing or recognition for trained and experienced quality engineers in the United States by the mid-1960s.

The successful launching of the Quality Engineer certification program in 1966 was followed by the launching of certification programs for Quality Technicians in 1970, Reliability Engineers in 1972, Quality Engineers in Training in 1982, Mechanical Inspectors in 1985, and Quality Auditors in 1988.

To date over 4,100 Mechanical Inspectors, 3,400 Reliability Engineers, 29,000 Quality Engineers, 5,700 Quality Auditors, and 7,900 Quality Technicians have been certified. The department receives about 20,000 applications for certification each year and conducts about 18,000 examinations per year. Approximately 45 percent of professionals taking the examinations pass these examinations and receive ASQC certification.

The ASQC certification programs have been widely recognized and accepted by major private sector employers in the United States. Over 125 large companies, mostly manufacturing companies, and some federal government agencies have formally endorsed the ASQC certification programs.

The ASQC certification process is similar for all six specialized areas. The certification processes for Quality Engineers and Quality Technicians are demonstrative of their certification programs. The following description is based on the very detailed ASQC information brochures for Quality Engineers and Quality Technicians.

Who is eligible: The ASQC certification process requires that a professional have a minimum amount of education and/or work experience in a given quality field and demonstrate a core set of knowledge and skills for that field through the successful completion of a written examination.

Course of Study/Prerequisites: The specific requirements for certification as a Quality Engineer are: (1) work experience and/or equivalent educational degrees, (2) proof of professionalism, and (3) successful completion of a written examination. In order to qualify for the written examination, an applicant must have at least eight years of on-the-job experience in one or more of the areas of the recognized "Body of Knowledge" for Certified Quality Engineers. At least three years of this experience must be in a decision-making technical, professional, or management position. The work experience requirement for other related fields, such as Quality Auditor, can be applied to the requirement for Quality Engineer.

This work experience requirement can be partially waived based on an equivalent educational degree or certificate from a college, university, or technical school with accreditation accepted by ASQC. One year of required work experience can be waived for certification from a technical or trade school, two years for an associate degree, four years for a bachelor's degree, and five years for a master's or doctor's degree.

The proof of professionalism can be demonstrated by one or more of the following: membership in a recognized professional association, registration as a Professional Engineer, and/or two references from members of recognized professional associations that verify a person to be a qualified practitioner of the quality sciences. Recognized professional associations include ASQC and other associations that are members of the American Association of Engineering Societies or the Accreditation Board for Engineering and Technology.

The certification requirements for Quality Technicians is very similar to those for Quality Engineers. In order to qualify for the written examination, an applicant must have at least four years of on-the-job experience in the quality sciences or a related field. This work experience requirement can be partially waived based on an equivalent educational degree or certificate from a college, university, or technical school with accreditation accepted by ASQC. One year of required work experience can be waived for certification in a Quality Technology program at vocational school or community college, two years for an associate degree, and three years for a bachelor's degree. The proof of professionalism for Quality Technicians and Quality Engineers is the same. The written examination for Quality Technicians and Quality Engineers are conducted through the same process, although the examination only has one part and is conducted for four hours.

Levels of Certification: There is only one level of certification for each of the six programs. However, recertification is based on participation in a "Maintenance of Certification" program. Three years are allowed for an individual to accumulate 15 recertification units. These units are given for the following: professional employment in the field of certification, participation in continuing education in the body of knowledge, attendance at technical conferences, workshops, and local section meetings, teaching courses, publishing articles and papers, and other professional activities.

If certified professionals do not accumulate the necessary recertification units, then they must retake and pass designated portions of the certification examinations in order to retain ASQC certification.

How Financed: Now totally self-financed through fees of $60.00 for members and $118.000 for non members for each test.

Occupational Analysis: The ASQC certification programs are based on a recognized set of core knowledge and skills for each quality profession. The knowledge and skills needed are summarized in a published topic outline known as the "Body of Knowledge." The topic outline for Quality Engineer consists of seven pages that cover: (1) fundamental concepts of probability, statistical quality control, and design of experiments, (2) quality planning, management, and product liability, (3) metrology, inspection, and testing, (4) quality cost analysis, (5) quality auditing, (6) reliability, maintainability and product safety, (7) quality information systems, and (8) motivation and human factors. An illustration of a topic outline is provided for "quality cost analysis" in Figure 1. This topic outline is supplemented by an ASQC Certification Bibliography that contains articles and books addressing each of the topic areas.

FIGURE 1.

Topic Outline Illustration from the

Body of Knowledge for Quality Engineers Quality Cost Analysis

A. Definitions of Quality Cost Areas
    1. Prevention
    2. Appraisal
    3. Internal failure
    4. External failure
B. Planning a Quality Cost Program
    1. Management orientation and approval
    2. Methods of collection
    3. Sources of data
    4. Tabulation
C. Cost Data Collection and Tabulation
    1. Selection of unit and cost elements
    2. Methods of collection
    3. Sources of data
    4. Tabulation
D. Trend Analysis and Corrective Action
    1. Charting
    2. Selection of measurement base
    3. Determining cost relationships
E. Business Reports to Management
    1. Oral presentations
    2. Charts
    3. Written reports and distribution
F. Frequency of Defects vs. Quality Costs
G. Implementation of a Quality Cost Program

1. Conceptual review of system
    a. Complete costs
    b. Costs properly classified
2. Functional adequacy
    a. Quality cost report reflects actual costs
    b. Measurement base accurately reported

H. Quality Cost Improvement Systems

The topic outline and the ASQC bibliography provide the only guidelines for candidates to prepare for the examination.

The Body of Knowledge for each recognized quality profession is defined by industry committees of the ASQC. ASQC members who are certified practitioners are appointed to these committees by the ASQC board. These committees are responsible for establishing and updating the Body of Knowledge and developing multiple choice questions for the certification examination. These industry committees submit questions based on the Body of Knowledge. These questions are then reviewed by the national ASQC certification committee and the appropriate subcommittee for the particular quality profession. If approved, they are then included in the national test item bank and are then included in the construction of examinations by the ASQC certification department.

Assessment: The written examination for Quality Engineers has two parts which cover the "Body of Knowledge" established for Quality Engineers. The first part is a three-hour examination on engineering principles. The second part is another three-hour examination on engineering applications. Each part of the written examination is in multiple-choice format. The applicant must pass both parts of the examination to receive ASQC certification.

Certification examinations are administered by the ASQC Certification Department consisting of eight staff. Certification examinations are held twice a year at specific sites and times throughout the United States. The ASQC staff reviews and approves all examination applications and constructs and scores the examinations. The department identifies, trains, and registers volunteer proctors who are ASQC members and are ASQC certified in the specific profession. The department conducts the examination in cooperation with local sections at a scheduled time and location where a qualified proctor can be obtained. The location may be a university, hotel, or some other appropriate location.

An applicant first submits a formal application to the ASQC Certification Department. This application provides the necessary documentation on: (1) required work experience and/or educational credentials, and (2) proof of professionalism. The application also includes a choice of examination times and sites. There is an application fee. If they application is approved, the applicant then receives a seating pass for admittance to the examination at a designated time and place.

All certification examinations are open-book and applicants are permitted to bring and use reference materials and calculators. These reference materials must be copyrighted materials that are available to all applicants. The proctors are responsible for checking candidates in at the examination site and auditing the examination process in compliance with ASQC Certification Committee Policies and Procedures. The proctors collect all examinations and send them to the ASQC Certification Department for scoring and storage.

After the examinations are scored and analyzed, the ASQC Certification Committee decides the passing score for the examination based on the overall results. The passing grade for each portion is determined independently. There is no pre-established passing score or a pre-established number of applicants who are certified. Applicants are notified whether they passed or failed within five weeks of the examination date.

Applicants who fail the examination may retake the examination as many times as they wish as long as they retake the examination within 18 months of their previous examination. Each time, applicants are provided an analysis of their performance in three examination areas.

Related Education and Training Programs: The ASQC maintains a strict policy that all certification candidates are responsible for their own study and preparation for the certification examinations. No internal or external education and training programs are required or endorsed by the ASQC in preparation for certification examinations. The ASQC also makes no claims that the completion of any specific course or program will significantly improve a candidate's chances of passing the examination.

However, the ASQC, its local sections, and external education and training providers do provide a wide variety of training materials and programs that can assist candidates in preparing for certification examinations. The Professional and Technical Development provides short courses and home study courses. Local ASQC sections, colleges and universities, and some private training and consulting companies also provide refresher or preparation courses and self-study materials.

Organization: National Institute for Automotive Service Excellence (ASE) and the partner organization National Automotive Technicians Education Foundation, Inc. (NATEF)
Address and Telephone: 13505 Dulles Technology Drive, Herndon, Va 22071-3415, (703) 713-0100 or 703 713-3800 for ASE
Contact: Bill Keisten, Sr. Vice President ASE Madeline Schumacher, Administrative Director, NATEF

Context: ASE is the certifying organization and NATEF provides technical support to members of the industry as well as education and training institutions to help them develop programs that are capable of receiving ASE program certification.

NATEF is an independent organization supported by other industry associations that represent a substantial portion of the automotive industry as well as education and consumer groups. ASE supports two forms of certification. One is for technicians and the second is program standards and certification for education programs (discussed under partners section as a special feature). Since the technician certification program began in 1972 570,869 individuals have passed the tests.

History: ASE was established as a non-profit corporation in 1972 as a result of a joint effort of the domestic vehicle manufacturers and the automobile dealers. Since that time additional segments of the industry have joined such as; independent garage owners, service station operators, aftermarket wholesalers and manufacturers. A key reason for the establishment of the organization was to promote public confidence and reduce the threat of increased federal regulation. The certification programs are the major tool in the arsenal to promote public trust.

Partners: In 1978 the Industry Planning Council (IPC) of the American Vocational Association determined that the automotive technician training programs needed improvement and the problem was national in scope. The Motor Vehicle Manufactures Assoc. funded a project to evaluate the various publicly funded automotive technician programs. Directed by IPC and implemented by the Southern Association of Colleges and Schools, the results of that study, completed in 1982, produced a program evaluation guide, task list, and tools and equipment lists. It did not, however, have standards. The development of the standards came later in the history of the program. This initial phase cost close to a million dollars.

Next was the task of finding a permanent home for the project. ASE, after conducting a market study, accepted the responsibility recognizing that certifying programs in individual schools would not be a self-supporting proposition. Given these financial realities, it was going to be necessary to have an organization that could accept tax-deductible contributions. The Automotive Service Association "donated" the non-profit NATEF to ASE, to help overcome a portion of the financing issue by providing a way for several organizations to donate funds. It was eventually determined that ASE would be responsible for the final designation of certification and NATEF would be responsible for the coordination of the effort.

The plan that was adopted by NATEF and ASE closely parallels the processes of an accreditation process. It includes:

1. a set of minimum standards for program certification;
2. a plan for conducting a self-evaluation, review of the self-evaluation at the national level, an on-site team evaluation of those programs whose self-evaluations meet industry standards, and certification of programs that were reported by the on-site team members as meeting ASE standards;
3. provision for training evaluation team leaders in each state, after application by the state and two programs being ready for an on-site team evaluation;
4. standards for evaluation team leaders and members;
5. methods of measuring evaluations; and,
6. procedures for appeal of certification decisions.

The process used is similar to those employed by formal accreditation bodies that approve programs of study in post-secondary education institutions. The minimum standards categories include administration, learning resources, finances, student services, instruction, equipment, facilities, instructional staff and co-operative agreements. NATEF trains evaluation team leaders to conduct the on-site reviews.

There are specialty areas for which a school may apply for certification: automobile, auto body, and medium/heavy truck and each of these have a range of sub-areas. The automobile training program is the oldest. There are 646 programs certified in 48 states; as of Dec. 1992 1,494 were in the process of self-evaluation. The auto body program began in 1989 and only 49 programs were certified by the end of 1992 with 344 in the self-evaluation phase. The Truck program only began in 1992.

Program certification cost: $35 for self-evaluation materials; and approximately $500 for materials and on site evaluation. NATEF's national cost of approximately $200,000 is covered through annual contributions from industry. One reason the program must be subsidized is the unique feature of focusing on an individual unit within an education institution, making the certification much more "fine grained" than standard accreditation programs.

After an institution becomes certified it is allowed to issue a certificate to the students graduating from the program certified by NIASE.

Who is eligible: For the individual certification program the applicant must pass one or more of the tests, show at least two years of work experience or specific education (either high school or beyond) can count for one year of experience.

Levels of Certification: ASE focuses on specialties: eight for automobile, six heavy-duty truck, two body/paint and three engine machinist specialty areas. There is a recertification requirement (through testing) every five years. This recertification requirement is considered an essential part of the endeavor in that it is the way to guarantee that individuals "keep up" with the changes.

Who manages: ASE, though test administration including the maintenance of the registry is contracted out.

How Financed: Fees of $20 to register and $15 for each test and recertification tests are $40. No subsidies are now required for this program.

Occupational Analysis: ASE uses broad based groups of individuals from all parts of the industry in a modified DACUM process. The standards are reviewed approximately every two years. ASE staff is responsible for conducting the test development workshops and defining the test items.

Assessment: Reading levels for the multiple choice test are kept low. ASE has found that hands-on testing is too complex and costly on a nationwide basis. However, the organization is satisfied that the ACT developed tests do a good job of measuring diagnostic and repair ability; tests range from 40-80 questions.

Roughly one out of three fail all tests, though it is higher for some tests such as diesel engine. The recertification tests are shorter, but harder than the original. When the program was originally developed they explored the possible use of performance assessments and found the cost to be prohibitive. The solution to the formal assessment process was to require at least two years of work experience or related education.

Organization: National Association of Printers and Lithographers (NAPL)

Address and Telephone: 780 Palisade Ave., Teaneck, NJ 07666, (201)342-0700

Contact: Susan Reif, WorkPlace Program Manager

Context: NAPL, established in 1933, focuses on management and education services for its 3,700 member companies, representing 400,000 employees. It also is active in government affairs with a substantial amount of this work focusing on environmental issues. It is a one third owner of the Graphic Arts Show Co. which runs a range of trade shows for the industry.

It is well known for its economic reports and forecasts produced by its Printing Economics Research Center. According to this Center, commercial printing was the 5th largest manufacturing industry in 1991 with total sales of $60 billion and approximately 34,000 establishments. Of these firms, 93.4% employ fewer than 50 employees and 66.2 % of that number have 10 or fewer employees. Industry employment has increased by 13% from 1986 to 1992 while total manufacturing decreased by 2.8 %. It has been estimated that the printing industry will require 74,00 to 117,000 additional employees by 1996 to accommodate its growth. Wages in non-supervisory areas averaged $11.75 per hour in 1991. In comparison the entire manufacturing sector's per hour employment wage was $11.18 and for the private economy it was $10.34.

NAPL runs programs through its Management Institute in the areas of Sales and Marketing, Business Planning, and Production Management. These three disciplines are taught concurrently in a six-day program held annually at Northwestern University. It is the only college-level program in the printing industry. It is supervised by members of NAPL's Continuing Education Committee. The faculty is carefully screened to assure a combination of the practical and theoretical and the classes are conducted through a case study approach.

Certification is awarded upon completion of one of the three courses of study. If an individual completes all three courses (requiring three years of attendance) the individual can use the marking of Certified Graphics Arts Executive (CGAE) after his/her name.

The cost of the program, including housing and meals, is $3,100 for members, and slightly more for non-members of NAPL. To date it has graduated 390 individuals in the worldwide.

On another front, the Carl Didde WorkPLACE Program was initiated by NAPL for the purpose of providing basic skills training for the industry. It does not yet have the status of a certification program, however it is discussed here due to its potential importance in the development of industry skill standards being developed under the Graphic Arts Technical Foundation grant from U.S. Dept. of Education. One of the interesting features of this program is the emphasis it places on providing work site learning materials for the supervisors as well as the employees.

History: WorkPLACE is a rather recent development that is an response to the skill requirements of the industry. NAPL conducted a survey of its members in the summer of 1989 to assess the need as well as the state of training programs in the graphic arts industry. Highlights of survey results show that, regardless of location and size of company, there is a common set of skill weaknesses within the industry. The definition of basic skills the Association is using includes problem solving, oral communications, reading, writing and math. The first two of these were reported as the weakest areas by 49% and 45%

respectively.

However, not unlike other industries, fewer than 5% reported involvement in any way with basic skills and reading training efforts. A substantial portion, 47%, requested the association provide assistance to them through the development of model programs. WorkPLACE is the outgrowth of that effort.

WorkPLACE was developed by NAPL and the Didde Corporation for $500,000 each. The Didde Corp. is a major supplier of capital equipment to the printing and packaging industry and has long been involved in training programs as a vendor.

The material describing the program asserts that it is the only industry-specific basic skills program for any manufacturing industry in the U.S. It has been field tested in facilities ranging from 30 to 1,000 employees and is still under development.

NAPL has published some of the aggregate results from the field tests. The tests revealed 73% of the employees had trouble reading and interpreting non-technical text (a standard plant memo), 63% could not set and solve a basic math problem involving written technical material, and 90% displayed difficulty when encountering new forms and unfamiliar graphic arts vocabulary, etc.

NAPL conducted another survey to assess the time, investment, and form of training within the industry. The results are not surprising -- there is minimum training at minimum cost. For the entry-level workers, many classified as unskilled, "training" is normally focused on orientation that tends to be between 3-11 days depending on the area of specialty, with most being on-the-job training and much of that focussing on safety issues.

There is a variance by business specialty with book and form printers reporting that over half of the firms provide some formal training. Overall, 80% of those that responded to the survey spend $500 or less per employee per year and more than half spend less than $250. (For an average printing company with annual sales per employee of about $75,000 that spends $250 per year per employee this is about three-tenths of one percent of gross sales on employee development.)

NAPL has developed a model program agreement that firms can use to negotiate agreements with a local industry or trade group, or educational facilities such as community colleges and vocational technical schools. The courses can be taught in house or by adult educators that have been screened by NAPL and kept on a registry maintained by NAPL.

Four sets of material are available, or soon will be, for On-the-Job Math Computations (estimated time 40 hours), Critical Thinking & Problem Solving (18 hours), Communications (36 hours), and Graphic Arts Process (36-40 hours). Exercises are industry-specific, for example, employees read a job jacket, a cutting order, or plant memos in which trade words and printing terminology are used. Some of the material includes pre and post course assessment material.

There is a sequence of training material available including manager's source books; skills inventory (for assessment purposes); administrator's and instructor's manuals; and employee workbooks. WorkPLACE will provide scoring and analysis as well as a management report.
The cost of materials is relatively modest. For example, a manager's source book is $75, an instructors manual is $60, and employee workbooks are $25.

B. INVENTORY OF CERTIFICATION PROGRAMS

ACCOUNTING

Organization: American Institute of Certified Public Accountants (AICPA)

Address and Telephone: 1211 Avenue of the Americas, New York, NY 10036-8775 (212) 575-6200

Contact: Rick Elam, PhD, CPA, Vice President Education

Context: AICPA was founded in 1887 and marked the organization of the accounting profession in the U.S. It has 305,000 members crossing all sectors. Among its many roles, AICPA is responsible for the introduction and maintenance of the CPA uniform exam.

The CPA designation is representative of the highest professional status within the accountancy field. The Uniform CPA exam has been adopted by all states and was first available in 1917. The exam is now required before any individual can be licensed by a jurisdiction as a CPA. This uniformity has been promoted by the Institute, which works closely with the National Association of State Boards of Accountancy, whose members are the regulators of the industry.

The primary purpose of the exam is to test the candidates' technical competence in the discipline of accounting. Passage is a prerequisite for possible licensure, but other criteria controlled by each state are also factored into the granting of the license.

Who is eligible: This varies from state to state, but the typical pattern is that a BA is required which has been conferred by a college or university recognized by that state's board of accountancy, and participation in an educational program including a specified number of credit hours.

Course of Study /Prerequisites: One of the functions of AICPA is to help define the pre-licensure education required of CPA's. It has issued an ongoing series of policy statements on the topic, as well as issuing several iterations of the required common body of knowledge for the foundation. The Carnegie Corporation supported a major project in the late 1960's that yielded a foundation study delineating the core knowledge, as well as a set of operating principles of how the profession should relate to the education institutions. They determined that a prescriptive syllabus was inappropriate for a variety of reasons. Three broad areas of education were thought to be needed: general (liberal arts), education in business administration, and accounting. Those three areas remain today the foundation of the recommendations of AICPA.

In 1992, a new policy report was issued regarding the pre-licensure education. It calls for at least 150 hours (five years) of college study in order to obtain the knowledge common to the profession and recommends that state accountancy boards establish this as a requirement for all new applicants after the year 2000. Practical experience is also to be incorporated in the curriculum.

AICPA has not created a separate accreditation board, but works in concert with the National Association of States Boards of Accountancy to advise state regulators. State boards have traditionally relied on the accreditation of the education institution as a whole, but there is a clear preference on the part of the profession to push specialized accreditation, arguing that state boards of accountancy could then place greater reliance on the academic credentials presented by applicants. Apparently this is a period of rather significant change in the relationships between the colleges and the accounting profession. AICPA is supporting a range of activities to improve the quality and number of accounting faculty, as well as to upgrade the pedagogy.

Levels of certification: This may vary by state, but essentially there is only one. There is no formal requirement by AICPA noted in the literature for continuing education, but it is strongly encouraged, and of obvious importance to the AICPA in that continuing professional education generated more than 21% of the income of the plus $110 million in 1992.

Who manages: AICPA's Board of Examiners is responsible for preparing the exam and operating the Advisory grading service.

How financed: There are fees, but the information sent did not provide the level, so this too must vary by state.

Partners: There are obviously multiple sets of interdependent relationships between regulators, educators, separate parts of the accounting profession that support this professional occupation.

Occupational Analysis and Assessment: The exam itself consists of four sections and is administered over a 2 1/2 day period twice a year. Currently 60% of each section consists of multiple choice and 40% is essay or problem-type questions.

The role of the Board of Examiners is critical. It consists of nine CPAs from small and large firms and from academia. There is a deliberate plan to assure an appropriate geographic mix. There are five standing subcommittees, four of which relate to the four separate sections of the test and one to grading.

The preparation process starts two years before a particular exam is given. There are at least four drafts of questions that are passed back and forth between staff, subcommittees and the Board. A substantial number of the questions are prepared by the examinations division staff, but questions are also sought from practitioners throughout the profession.

Grading can include as many as three reviews of the written sections. Uniform grading guides are developed and approved through the same process as the development of the questions themselves. There is an underlying assumption that the average ability of the candidates is fairly consistent from year to year, so it is possible that points will be added to the score of an examination section when only a small proportion of candidates earn a score above the passing point.

Grading guides are applied to a representative sample of candidates' papers. There is an intensive analysis of the objective questions throughout the testing period.

In order to recognize the outstanding candidates, AICPA presents awards to candidates who pass all four sections at one time and receive the highest grades. There are gold, silver and bronze models given to the top three scorers, as well as certificates of high distinction. The Institute has kept the standards high for these certificates; for example, in the November 1990 exam period, out of over 75,000 candidates who completed over 273,000 papers, only 116 certificates for high performance were awarded.

Organization: Institute of Certified Management Accountants

10 Paragon Drive Montvale, NJ 07645
Contact: James Bulloch

System has been operating for 20 years with 12,210 certified and 90,000 members. Organization operates a four part exam as part of the certification.

A B.A. from a U.S. institution or equivalent is required to sit for the exam. In addition, to get certification, work experience is required, though is not necessary before taking the exam.

Organization: Accreditation Council for Accountancy & Taxation
1010 N. Fairfax Street Alexandria, VA 22314
Contact: Marianne Anderson

The organization offers two certification programs. The requirements for certification are education, work experience, and passage of a written examination. The requirements for recertification are 120 CE hours (Accountancy) and 90 CE hours (Taxation) during a 3-year period.

In 1991, 400 written examinations were administered. The written examination fee is $50.00, and the recertification fee is $50.00. There is an annual fee of $50.00 per certification.

Some activities of the certification process are contracted out. The certification body is independent, but attached to the parent organization.

Organization: National Society of Public Accountants
1010 N. Fairfax Street Alexandria, VA 22314 (703) 549-6400
Contact: Stanley Stearman

System has been operating for over 20 years with 7,0000 - 8,000 certified and an estimated 20,000 members. Organization has an accreditation program that is based on an exam.

Accountants are licensed and regulated by the state. The society's program is voluntary.

Organization: The Institute of Internal Auditors (IIA)
249 Maitland Avenue Altamonte Springs, FL 32701-4201 (407) 830-7600
Contact: G. Peter Wilson

System has been operating since 1973 with 18,000 certified and 45,000 members.

The CIA Examination (available in English, French, and Spanish) is designed to measure specific skills required of candidates. The CIA Examination should measure the internal auditing knowledge and judgement that an internal auditor with a baccalaureate degree in business and two years of internal audit experience should possess. (A statement of the applicant's work history must be attested to by a CIA or manager.) A CIA applicant must pass the four parts of the exam.

For an individual to maintain their CIA designation, they are required to complete 100 hours of Continuing Professional Development (CPD) activity in each three-year rolling period. CPD activity includes formal education programs, published writing, oral presentations, or specified participation in professional organization activities which contribute to the development or maintenance of professional auditing proficiency.

The IIA offers continuing educational products and services (e.g., publications, self-study programs, conferences, forums, and seminars), which are developed, monitored, and updated on an ongoing basis by a core of dedicated volunteer committee members and IIA staff. The content of these offerings is based upon projects cultivated by other IIA committees, including those addressing certification, ethics, industry and government relations, international relations, professional issues, quality assurance, research, and standards. These materials are used by colleges and universities.

Organization: National Association for Bank Cost and Management Accounting
P.O. Box 458 Northbrook, IL 60065-0458 (708) 272-4233
Contact: Nancy Basinger

System has been operating since 1985 with 25 certified in level one, 6-8 certified in level two and 500 estimated members.

Certificate are given to individuals attending their continuing education courses. While no exam is required, there is a credit hour requirement.

Level 1 Certificate - 60 continuing education credits at their workshops
Level 2 Certificate - Additional 45 credits, teach at one workshop or publish an article

The process of obtaining a certificate can take four years.

Approved by the National Association of State Boards of Accountancy. Accredited with them, and each state will accept credits from their program towards an individual obtaining a CPA.

Organization: National Association of Certified Fraud Examiners
716 West Avenue Austin, TX. 78701 (512) 478-9070
Contact: James D. Ratley

System has been operating for five years with 6,000 certified and 6,000 members. Certification is based on an exam, professional references, and a transcript from college. A college degree or 8-10 years work experience is required.

Organization offers training videos and seminars. The videos are purchased by universities, and businesses to train their auditors.

AUTOMOTIVE SERVICES

Organization: Automotive Service Association Management Institute, (ASAMI)
Address and Telephone: PO Box 1047, Bedford, Texas, 76095-1047 (800) 272-7467
Contact:

Context: The Automotive Service Association established ASAMI recently (in the late 1980's) to provide business management education to the automotive repair industry. Increasing business management knowledge and providing a career path plan are the goals.

Who is eligible: There are no explicit exclusionary clauses, but it is clearly geared towards facility owners/managers.

Course of Study/Prerequisites: The accreditation is based on completing and accumulating 120 credits of ASAMI courses that are tracked by the Institute. There are a variety of options available for accessing courses, including self-study tapes, attending national events sponsored by the ASA and through one day seminars sponsored by the local or state chapter. A review of the material clearly shows that the experience and skills of the trainers are considered of significant issue to the ASA.

Levels of Certification: Accredited Automotive Manager (AAM)

Partners: It is supported by the Automotive Warehouse Distributors Association and the Paint Body and Equipment Association in addition to ASA. The Warehouse Distributors University helped to develop the Institute.

Who manages: ASAMI

How Financed: Fees for courses

APPRAISALS (With specialties in a variety of industries)

Organization: American Society of Farm Mangers & Rural Appraisers (ASFMRA)

Address and Telephone: 950 South Cherry Street, Suite 508, Denver, Colorado 80222 (303) 758-3513

Contact: Nancy Reeves Hardiman, Education Director

Context: ASFMRA's history is rooted in the midwest and was founded by farm managers concerned with the effects of the 1920's - 30's depression. It is composed predominantly of consultants who provide professional management and appraisal service worldwide. It has 37 chapters and 20 working committees. Today there are approximately 4,000 active members and 1,602 have earned designation as either an Accredited Farm Manager (AFM) or an Accredited Rural Appraiser (ARA). It is an individual membership organization whose other members come from students, candidates for accreditation, and the academic community. The purpose of the certification program is to advance the professional qualifications and skills of the membership and to provide accreditation for the two aforementioned specialists. As of 1995 there will be a third group, Real Property Review Appraisers (RPRA), which is described as a new specialty that will provide a safety link between an appraiser evaluating a property and the individual or organization requiring the appraisal, with the focus being on ensuring that all legal and regulatory requirements have been met.

Who is eligible: A minimum of five years of experience in either farm management or appraising experience for the two current recognitions. Appraisers must be licensed to meet the federal regulations for Financial Institutions, and most states also require licensure.

Course of Study/Prerequisites: Submission to Accrediting Committee of a demonstrated management or an appraisal plan. The Farm Manager must pass two Society management courses; the Appraiser, five relevant courses. Both must attend a report writing school.

The new RPRA will be the first to explicitly require a four year college degree or its equivalent.

The Society sponsors a wide range of courses across the country, most of which are one week in duration and seminars which run from 1/2 day to three days.

Levels of Certification: Technically, only the three, but membership in the Society allows for Professional, Candidate, Academic, Affiliate as well as students and retirees; for the first two of these categories, college degrees or equivalents are assumed. The Professional must also attend and pass courses sponsored by the Society.

Continuing education of at least 60 hours every three years is required for an individual to maintain the status as a Professional or as an accredited agent.

Who manages: The Society, which uses standing committees for oversight.

How financed: Dues and fees. There are variable individual fees for courses, and the dues range from $325 per year for an Accredited member, $250 for a professional, $200 for a candidate on down to $50 for a student.

Partners: The Society is currently increasing its activities with other appraisal organizations (not explicitly identified) which are exploring the possibility of developing a formal plan for integrating their course work and textbooks into accredited university and college curricula.

Instructional Issues: All instructors must attend a workshop explicitly designed for them. Instructors are drawn from the ranks of colleges and universities and the ranks of those already accredited.

Organization: American Association of Professional Landsmen (AAPL)

Address and Telephone: 4100 Fossil Creek Blvd., Fort Worth, Tx 76137-2791 (817)847-7700

Contact: Thomas N. Burdette, CPL, Director of Education and Research

Context: AAPL was established in 1955 for the primary purpose of recognizing practicing landsmen and as a vehicle for continuing education. The organization's roots are geographically in the southwest, primarily Texas, but it now has members and regional affiliates in Canada and several other parts of the U.S. It represents a small but critical part of the petroleum industry that has experience in the performance or supervision of negotiating for the acquisition or divestiture of mineral rights and negotiating the business agreements that provide for the exploration for and/or the development of minerals. The certification program was launched in 1980. The certification program of AAPL is to provide a standard of the knowledge required to fulfill the work of the landsman. Substantial attention is devoted to the code of ethical conduct as well as proof of knowledge. Studies have shown that those who have received the designation receive greater compensation than those without.

Who is eligible: No degree is required, but the candidate must have 10 years of work experience. Actual work experience time can be reduced by three years if the candidate has earned a degree from an AAPL approved university or college. Additional credits are given if the college education is in an AAPL approved program, but in no case can there be less than five years of full time work experience. Must be nominated by a local certification committee to be considered a candidate and sponsored by three CPL's. Must sit for examination within 18 months of nomination. No more than two retakes of any section allowed.

Levels of Certification: The core certification is the Certified Professional Landsman (CPL). Due to the increased specialization and experience required to comply with complex statutory and regulatory frameworks, in 1992 a specialty certification program was established for environmental site assessors (CPL/ESA). Only those who are CPL certified may qualify for this additional recognition. Additionally, they must attend a week long program and score 80 out of 100 points on each section of a three-part exam.

Originally years of experience were included as a qualifying factor for recertification, but after 1997 experience will no longer count, and all CPL's must be involved in earning 50 credits in five years through formal continuing education. Generally a full-day seminar sponsored by AAPL will yield five credits. For the new CPL/ESA certificate the standards are tougher -- 10 credits each year.

Course of study required/Prerequisites: As of 1992, active member status finally moved to the requirement of a BA degree plus the passage of the exam and the 15 continuing education credits every three years.

Who manages: AAPL

How financed: Fee for exam is $254.50 for AAPL member, $429.50 for non-member, Certification fee for members is $30.00 for non-members it is $475

Organization: National Association of Master Appraisers
303 W. Cypress Street San Antonio, TX. 78212-0617 (512) 271-0781
Contact: Gary Deane

System has been operating for 15 years with 7,500 certified and 3,500 members. Organization gives a written exam. Association confers designation as a master real estate appraiser, but states issue the certification. There are two levels, residential and general.

Organization: International Society of Appraisers
P.O. Box 726 Hoffman Estates, IL 60195 (708) 882-0706
Contact: Janis Walters

System has been operating since 1981 with 1,500 certified for all three levels and 1,660 members. The organization has no educational prerequisites. The three levels are: Associate members, Full designated members, and Certified personal property.

Organization: National Association of Independent Fee Appraisers
7501 Murdoch Street St. Louis, MO 63119 (314) 781-6688
Contact: Shirley Sneed

Program has been operating since 1979 with 2,500 certified and 5,000 members.

Educational program with exams in the field of real estate appraising. Leads to certification. Educational and experience prerequisites include two yrs. of college or equivalent

work experience varies and depends on whether residential or commercial appraising
Four specialties are certified: Residential, Commercial, Agricultural appraisers
and Counseling on appraising.

Organization: Institute of Business Appraisers
P.O. Box 1447 Boynton Beach, FL 33435 (407) 732-3202
Contact: Edna Tizzi

System has been operating since 1978 with 150 certified and 2,500 estimated members.

Certification program is based on two exams.

Education prerequisite - four years of college or equivalent work experience - candidates must present appraisals they have done.

An attorney or broker can be a certified business appraiser. A broker's license is required in Florida. Depends on state.

Organization: American Society of Appraisers

P.O. Box 17265 Washington, DC 20041 (703) 478-2228

Contact: A.W. Carson

System has been operating over 50 years with 4,000 certified and over 6,000 members.

2 years work experience in specialty in which they want to be certified, four years of college

2 levels: accredited member and accredited senior appraiser

Real estate appraisers are licensed by states.

Organization: National Association of Real Estate Appraisers

8383 E. Evans Road Scottsdale, AZ 85260 (602) 948-8000

Contact: E. Kenneth Twichell

System has been operating for 10 years with a couple thousand certified and 11,000 members.

They issue certificates to individuals with state licenses. They supply courses to licensed individuals. After they complete a certain number of credit hours (varies by state), the Association issues them a certificate that certifies that they are a member of the national association.

Individuals are required to have two years of work experience and to be state licensed.

3 levels: certified real estate appraiser; certified commercial appraiser; registered professional member (not state licensed, but can be a member of the national association).

Organization: Association of Machinery and Equipment Appraisers

1110 Spring Street Silver Spring, MD 20910 (301) 587-9335

Contact: Fred S. Mervis

System has been operating for seven years with 281 certified and 281 members.

Organization has no educational prerequisites.

Two levels: accredited equipment appraiser - five years experience and pass an exam; and certified equipment appraiser - seven years experience

Organization: American Association of Certified Appraisers

800 Compton Road, #10 Cincinnati, OH 45231 (513) 729-1400

Contact: Anthony Brueneman

Certification with the association is based on education and experience. They have an exam that is required for appraisers who have not taken the required education courses. In addition, all individuals are required to submit samples of their appraisals, and professional references. The degree of detail required in the samples depends on the level at which an individual is being certified.

5 levels in the certification system - represent different types of appraisers and advancements.

Lower designations: 75 class hours of approved education; two years work experience

Senior Certification: five years work experience; 165 classroom hours

Consultant (highest): senior for at least two years; seven years work experience; college degree

Organization's requirements match the state requirements for education and work experience.

Organization: Accredited Review Appraisers Council
303 W. Cypress Street P.O. Box 12528 San Antonio, TX 78212 (512) 225-2897
Contact: Deborah Deane

System has been operating for 5-6 years with 500-1,000 certified and 600 members.

Certify review appraisers after completion of course work, take exam, submit demonstration report.

COMMUNICATIONS

Organization: International Association of Business Communicators Address and Telephone: One Hallidie Plaza, Suite 600, San Francisco, Ca 94102 (413) 433-3400

Contact: Norm Leaper, IABC President

Context: The Accredited Business Communicator (ABC) is a professional development program of the IABC. It recognizes both personal and professional achievement in a specialized field of communication management. IABC started here in the U.S. and is spreading out to Europe and Australia/New Zealand. From the material sent, it would appear that the IABC is an organization of an emerging profession, composed of individuals within larger companies and pubic affairs firms.

Who is eligible: The ABC is aimed at mid-career and above professionals and cuts across industry lines.

Course of Study required/Prerequisites: Must have a minimum of five years of experience in the profession and a BA degree or a total of nine years of experience. There is a trade off between degree and experience: nine years experience/ no degree required, eight years experience/ one year of education, seven years/ AA or two years, six years/three years education, five years/BA. There is no explicit course of study required.

Levels of Certification: Only one, and it is retained as long as they are members of the IABC or pay the annual maintenance fee.

The Assessment process: There are four steps: 1) the application form itself must be approved by the Accreditation Council; 2) a portfolio of work samples; 3) a written test; and 4) a 1/2 hour oral that is videotaped. Portfolio counts 25%, Written 58%, and oral 17%. Material from test and oral is sent to three examiners and there is an appeal process.

IABC has developed an outline for craft and management skills and constructed levels of expertise. The Accreditation Board offers workshops around the country and has produced a basic textbook and other educational materials.

Who Manages: IABC's Accreditation Council

Fees: For IABC members in U.S. $225, non-members $400.

Organization: Public Relations Society of America

33 Irving Place, 3rd Floor New York, NY 10003-2376 (212) 460-1408

Contact: Dorothy McGuire

System has been operating for 25 years with 300 annually certified and 15,000 members.

Organization gives a written and oral examination

Five years full-time work experience in public relations

Organization: Radio Advertising Bureau

Contact: Ken Costa

System has been operating for about 20 years with 3,730 certified and 3,000 members.

Organization has a three hour exam including multiple choice and an essay that is to write a sales presentation. Essay is half of the grade. They also have different versions for large, mid-size and small cities. There is also a national version for network and national accounts and a special version for research people.

Offers taking exam with a neutral third party, e.g., school, notary public. No relatives or advertising industry persons allowed to monitor taking of the exam.

If an individual doesn't pass the exam he/she can retake it in three months.

Exam charge is $150.00 for members, $300.00 for non-members.

If a city-wide exam (e.g. # of stations get together) is given, the rate drops to $100 a person.

Prerequisite of three years of experience in professional capacity (e.g., sales, general management, research or sales promotion). They do not allow on-air experience.

No educational prerequisite. However, individuals who have attended the radio sales education program are given six months credit toward the three year experience prerequisite. They don't accept credits from any other educational institution.

In 1992 they began a program to upgrade the CRMC, the regular certification given. To upgrade an individual has to be certified for at least a year. Also in 1992 they began their CRSM (for sales managers). An individual has to be a sales manager. This program is an intensive three day over the weekend program taught by high level sales managers. They allow 75 individuals to take the course. They plan to have three during 1993. Certification requires the writing of a white paper on an aspect of sales management.

A study manual for home self-study is available.

CONSTRUCTION

Organization: Independent Electrical Contractors (IEC)

Address and Telephone: PO Box 10379 Alexandria, VA 22310-7448

Contact: D.L. "Ike" Casey, Executive Vice -President

Context: IEC was founded in 1958 and represents non-union contractors. By their calculations, 85% of all electrical contractors are independent. In 1984 there were 545,000 electricians and there is projected

growth of 16% by 1995.
They have a program called PRIDE that includes a registered apprenticeship program, upgrade programs for journeymen, supervisors and management courses.

IEC is participating in the DOL-sponsored skills standards development grant.

Who is eligible: For the four year apprenticeship program (8000 hours), each local committee is responsible for establishing the rules for entry, but the national standards require that the minimum age be 17 and note that those selected for the program have usually completed at least one year of algebra and have good aptitude in science and/or mechanics.

The program is to be geared to the needs of the member firms, but in order to increase income for the local chapters, non-member firms are encouraged to participate.

Course of Study/Prerequisites: The IEC has developed a four year curriculum guide and exams related to the course work. Material is updated regularly and in 1992, 11 competencies were established and the curriculum is being revised accordingly.

Who manages: Local Committees that agree to abide by the national processes established by IEC.

How Financed: Varies; for example, contractor membership contributions based upon a set fee for each apprenticeship that he/she employs or a set fee for each productive man-hour; a work tuition from each apprentice enrolled, with the preference being weekly payroll deductions; or tuition and book fees paid by student or employer prior to each semester.

Organization: International Electrical Testing Association (NETA)

Address and Telephone: PO Box 687/231 Red Rocks Vista Dr. Morrison, Co 80465, (303) 467-0526

Context: NETA was established in 1972. There are qualifications for the member firms. They must be corporately independent; it must certify a minimum of two (or 25%, whichever is greater) as NETA certified Test Technicians; a NETA firm must perform work according to guidelines and standards that are specified by the Association; the firm must maintain a calibration accuracy program directly traceable to the National Institute of Standards Technology (NIST) for all instruments; there must be a professional electrical engineer on staff or under contract to review all engineering studies and reports; and be well established as a full service testing and maintenance business.

Essentially these specialty firms offer a 3rd party test for a wide range of electrical equipment and systems. A major selling point is the certification of the technicians.

Who is eligible: To qualify as NETA certified test technician, a service technician must be employed by a NETA full member company; have a minimum of 4000 work hours experience in the testing and maintenance of electrical power distribution systems; have worked on a full time basis in electrical testing, maintenance and repairs for the last two years; be versed in NETA's published specifications; pass an exam covering power theory, maintenance, and trouble-shooting skills.

Organization: Vinyl Siding Institute (VSI)

Address and Telephone: 355 Lexington Ave. New York, NY, 10017

Contact:Juliette Lang Cahn

Context: VSI is a division of the Society of the Plastics Industry. It does not manage certification system nor is it involved in the actual training of students. However, due to their charter in research, development and testing of products, they do have concern about proper installation. In collaboration with the Home Builders Institute, they distribute to carpentry instructors throughout the U.S. instructors' guides and application instructions in hard copy and video format.

ELECTRONICS

Organization: Electronics Technicians Association (ETA)

Address and Telephone: 602 N Jackson, Greencastle, Ind. 46135, (317) 653-8262

Contact: Richard L. Glass, CETsr President

Context: There is a close connection between the ETA and the National Satellite Professional Dealers Association (SDA) as Mr. Glass serves as President of both organizations. However, the following material will address only the ETA certification program that was established in 1978. The program focuses on examinations that have a basic exam and specialty options in six areas. These areas include: 1.Consumer electronics with two subspecialities (radio-television or audio hi-fi).2. Communications electronics with two specialties (two-way or aviation electronics) 3. Commercial electronics with two specialties (master television antenna and videotape recording) 4. Biomedical electronics 5. Industrial electronics, and 6. Computer electronics.

Who is eligible: Minimal criteria is less than four years of experience or schooling.

Course of Study/Prerequisites: There is no formal educational course of study required. The prerequisites are described under next section.

Levels of Certification: There are four levels: Associate, Journeyman, Senior, Master.

For the Associate, individuals with less than four years of experience or schooling may attempt only this portion. For the Certified Electronics Technician or Journeyman, four or more years of combined schooling and/or experience plus taking one of the specialty exams noted above. For the Senior Technician, at least eight years in the profession and taking at least one specialty exam. Master technician is reserved for those who are proficient in all six major areas and have at least eight years as a CET.

Who manages: The University of Iowa's Engineering Extension manages the examination process. **How Financed:** Fees that vary by level of test, $25 for associate up to $80 for Master. If all specialty options were included, the total would be $210.

Partners: The exam is authorized by the military DANTES. Also in 1992, ETA and the SDA signed agreements with Central Community College Ky., which has several campuses and recognizes ETA and SDA seminars as being eligible for college credit.

Organization: National Electronic Sales and Service Dealers Association
2708 W. Berry Street, #3 Ft. Worth, TX 76109 (817) 921-9061
Contact: Clyde Nabors

System has been operating since 1965 with 35,000 certified and 2,030 members.

Organization gives two exams to certify electronic technicians:

If less than four years experience take associate exam.

If more than four years take second level. Exam is for whatever field they want to specialize in (eight options).

Some volunteers who are electronics instructors use their curriculum to teach classes at junior colleges and colleges.

Organization: International Society of Certified Electronic Technicians
2708 W. Berry Street, Suite 3 Fort Worth, TX 76109
Contact: Alice Johnson

System has been operating for 25 years with 35,000 certified and 2,000 members.

The association provides an associate level and a full journeyman level certification. To become a associate, one must pass a written exam that includes calculation and measurement. To become a journeyman, one must pass the associate's exam as well as a test in an area of specialization. The society offers courses at its conferences.

Organization requires no prerequisites to become an associate, but one must have four years of experience to take the journeyman exam.

Several states require that a technician be certified before a business can be licensed to operate.

The society publishes study guides which are sold to college bookstores.

ENGINEERING

Organization: National Association of Radio and Telecommunications Engineers
P.O. Box 678 Midway, MA 02053 (508) 533-8333
Contact: Ray D. Thrower

System has been operating since 1982 with over 12,000 certified and estimated 7,500 members.

Organization's certification based on experience, education, exam, and references. They certify technicians in telecommunications at four different levels. Work experience required depends on the level. four years education, B.S. degree required. They also certify engineers in telecommunications. In addition, they certify electromagnetic capability - must have six years experience and one year professional training.

Experience and educational prerequisites depend on type of occupation being certified and the level.

FCC in 1983 and 1984 encouraged private industry to come up with certification programs. Since then a few states (2 or 3) are working on statutes to bring telecommunications into professional engineering programs.

There is an academic committee of professors from different colleges around the country that develops their exams. However, they don't recommend any particular material to other institutions.

Organization: American Association of Cost Engineers P.O. Box 1557 Morgantown, WV 26507 (303) 296-8444

Contact: Kenneth K. Humphreys

System has been operating since 1975 with 500 certified and 6,000 members.

Based on exams and a 2,500 word essay submitted at the time of the exam.

8 years verifiable work experience required and four years academic.

They issue consulting and engineering certificates.

In some states, unless an individual has a professional engineering license, they can not obtain an engineering certificate, but can obtain a consulting certificate.

Organization: American Society of Plumbing Engineers
3617 Thousand Oaks Boulevard, #210 Westlake, CA 91362
(805) 495-7120

Contact: John S. Shaw

System has been operating since 1982 with 2,000 certified and estimated 6,500 members.

Organization gives exams.

A full member needs eight years experience in plumbing design.

FINANCIAL SERVICES

Organization: American Bankers Association (ABA)

Address and Telephone: 1120 Connecticut Avenue, N.W. Washington, D.C. 20036 (202) 663-5382

Contact: Peter A Carlivati

Context: For over 90 years, virtually all banks and their employees have participated in ABA-sponsored educational programs. With over 225,000 annual enrollments, ABA American Institute of Banking (AIB) may be the largest trade association-sponsored education and training organization in the world. It has 300 chapters and 160 study groups in all states, Puerto Rico and Guam. AIB offers approximately 70 courses and training leading to banking-specific diplomas and certificates that are taken by over 200,000 bankers each year. About 2500 earn diplomas and certificates annually. Through its college affiliation program, students may earn both AIB credit toward industry diplomas and certificates as well as college credit in nearly 200 colleges and universities nationwide. In 1991 ABA sponsored the creation of a new program: The Institute of Certified Bankers (ICB) that is now offering certification in four areas.

Who is eligible: There are no explicit triggers. Clearly the focus is on individuals employed in the banking community but non members of ABA can take at least the correspondence courses. The new Certified banker must be employed in the banking industry. Since each bank establishes their own hiring practices prior educational and experience levels of candidates will vary considerably. It is clear that many candidates do not have college degrees given the large number of courses that are developed for college credit.

The initial certification program will vary by education, experience, ethics and examination. Grandfathering will be allowed only in the first six months.

Course of Study/Prerequisites: Will vary by specialization. The AIB basically provides a full range of post-secondary education and training programs are focused on the needs of the industry.

Levels of Certification: There are four distinct specialties: Trust and Financial Advisor; Corporate Trust Specialist; Regulatory Compliance Manager; Financial Services Security Professional.

Normally a given number of hours of continuing education over a three year period will be required to retain one's status.

Who financed: Costs for local educational programs are set by local chapters. The national correspondence course price list shows individual study tuition per course for a nine month course is $135 including the exam, but not the books. Fees for the Certification were not made available in material transmitted.

History: A part of AIB's role is to provide support for state banking schools, sponsored by bankers' associations to help ensure that there is a nationally integrated and systematic career development approach for the students in the programs. Local AIB chapters form the base of the network that provides many of the courses directly through their own paid staff or through members of the banking community. At the end of 1991, 42 of the 300 chapters had become accredited through ABA's Professional Development Program. As a result of that accreditation, the American Council on Education's (ACE) Program on Non-Collegiate Sponsored Instructions's (PONSI) recognizes some of the courses for college credit. PONSI recognition in turn is accepted by most public post-secondary institutions and many nationally known universities.

The rather recent adoption of professional certification as a part of the services of ABA is due in part to the unprecedented changes that have occurred in the banking industry -- deregulation, interstate banking, new products and services and in some cases an increase in the real or potential threat of regulations due to saving and loans and bank failures. In 1987, a special task force on Banker Education concluded that there was a substantial need to broaden the focus of the education and training. This will assure an emphasis on professional development, including programs to assist banks in improving competency by developing mechanisms for screening, testing and certifying.

ABA's Education Policy & Development Council addressed the issues of coordination and management with some care. The concern was to establish the proper infrastructure for certification in a way that would assure nationwide support, avoid duplication across the industry, and assure uniformity prior to the creation of a separate Institute.

Organization: The Institute of Financial Education (IFE)

Address and Telephone:111 East Wacker Drive, Suite 900, Chicago, IL 60601-4389 (202-946-8800)

Contact: Catherine Izor, Product Development Manager

Context: IFE operates eight certification programs (called "awards") in eight banking related fields. The certifications are awarded based on completion of required classes or on mastery of subject matter demonstrated by passing a test. Some credit can be earned through other accredited institutions. Courses are delivered through local IFE chapters, independent study, or in-company classes.

There are about 30,000 IFE members and 310 awards have been issued under the current awards program.

Course of Study/Prerequisites: The courses of study range from a two course program for the teller award to an eight course regimen for the Branch Manager or Lending Specialist award. The current awards program has been in operation since 1990. Prior to that time The Institute offered thousands of awards under a different program. There are no prerequisites. **Levels of Certification:** The certifications are not expressly progressive so there are no levels as such. Many of the courses required for one certification are required for another, often for a certification designed for a job area that usually filled by more senior employees. Thus informal levels exist.

The eight award programs are: Teller, Senior Teller, Financial Counselor, Financial Services Supervisor, Branch Manager, Banking Operations Specialist, Lending Associate, and Lending Specialist.

How Financed: Through fees for courses, awards, transfer credit, and exemption exams the student population funds the program. Financial institutions who belong to The Institute pay a membership fee which also helps support the awards program.

Organization: Mortgage Bankers Association of America (MBAA)

Address and Telephone: 1125 15th St. N.W., Washington, DC 20005-2766 (202-861-6578)

Contact: Education Department

Context: MBAA operates the Accredited Residential Underwriter (ARU), Certified Mortgage Banker (CMB), and Accredited Residential Originator (ARO). CMB system in operation since 1974, ARU since 1988, and ARO since 1992. There are 460-CMB, 24-ARU certified and an estimated 2,400 members.

Who is Eligible: Individual must show evidence of employment by an MBA member firm for one year, have an acceptable recommendation by a senior officer of the firm, three years of experience in processing and/or underwriting 1-4 unit residential properties.

Course of Study/Prerequisites: If individual has ten years of experience no course study is required. Individual must complete three of seven MBA correspondence courses in a five year period unless he or she can show proof of being approved by HUD or VA as underwriters. Candidates must take two specific MBAA's seminars. Candidates must be employed by a member organization at the time of application and submit a recommendation from a senior official of that organization.

The CMB program has the most rigorous requirements and includes most of the ARU course work, but each level is nevertheless distinct. All certified individuals are still subject to state licensing requirements. Training kits have been developed which are used primarily by mortgage banking firms and government agencies.

Levels of Certification: There are three, the Accredited Residential Underwriter (ARU), the Certified Mortgage Banker (CMB), and the Accredited Residential Originator. Each requires Course work and an examination. Recertification is based on 40 hours of continuing education in specified MBA programs every three years.

How Financed: Fees including a $150 non-refundable application, and $50 to maintain "currently accredited" status.

Organization: National Institute of Pension Administrators
145 W. First Street, #A Tustin, CA 92680 (714) 731-3524
Contact: Dean Davisson

System has been operating since 1983 with 150 certified and 450 estimated members.

Conducts a continuing education program. For certification, individuals are given a six part exam.

Organization requires two years work experience

Puts on workshops in different parts of the state to keep pension administrators current on changes.

Organization: American Collectors Association, Inc. (ACA)
Address and Telephone: PO Box 39106 Minneapolis, MN 55439-0106 (612) 926-6547
Contact: Debra Ciskey, Director of Education

Context: ACA was founded in 1939 to aid collectors and to establish nationwide professional and ethical standards. There are approximately 4,000 U.S. and international members with an estimated 54,000 employees. These members serve more than one million retail and wholesale credit grantors by collecting close to $6 billion dollars of delinquent monies each year. ACA certifies Collectors.

Who is eligible: An individual who attends two specific schools, gains on the job experience and passes an exam.

Course of Study/Prerequisites: The basic Certified Collector candidate must have no less than one year of experience with the same employer/collection agency. Must show proof of taking course (can be computer assisted) on the Fair Debt Collection Practice Act and another on telephone techniques. Exam is administered by candidate's supervisor at the worksite.

Levels of Certification: There are six levels of certification; the basic certified collector (described above); advanced certified collector; certified skiptracer; certified supervisor; certified sales professional, and finally certified instructors and they must be recertified every four years. More time spent on the job and participation in specified courses are required for the specialized certifications.

How Financed: For members, the fee for the exam is $25, for non-members $50. Course materials extra.

Who manages: ACA's Education Department

Organization: American Payroll Association
30 E. 33rd St, 5th Floor New York, NY (212) 686-2030
Contact: Jody Richard

System has been operating for 10 years. 2500 individuals have been certified; 430 new certifications are issued annually. Membership is 9500.

To be eligible to take the certification exam an applicant must have worked in payroll for three of the last five years. The certification exam which is offered once a year is comprised of 200 questions.

1 level of certification; individuals must recertify every five years.

Training to prepare for the exam is provided by seminars, local chapter study groups and a computerized learning system.

Organization: Society of Cost Estimating and Analysis
101 S. Whiting St., Suite 201, Alexandria, VA 22304 (703) 751-8069
Contact: Debbie Vogel

System has been operating for two years. 1600 are certified with 30 new certifications every year. Membership is 2300.

Certification requires education, work experience and passing a four hour exam.

Organization: Association for Investment Management and Research
5 Boar's Head Lane P.O. Box 3668 Charlottesville, VA 22903
(804) 980-3670
Contact: Darwin M. Bayston

System has been operating for 31 years. There are 17,000 certified and a membership of 35,000

To qualify for the association's single certification there is a sequence of three exams and requirements of three years of work experience and a bachelors degree.

HEALTH RELATED FIELDS

Organization: Dental Assisting National Board (DANB)
Address and Telephone: 216 E. Ontario Street, Chicago, Ill. 60611, 312/642-3368
Contact: Executive Director Richard D. Hengl

Context: DANB was established in 1948. In October of 1991, there were 26,186 assistants with valid certificates. During 1991 (through four administrations) 4,294 CDA exams were administered. There was a failure rate of 29.4% for the COA (186 sat with 122 passing).

Four Certificates are available for Dental Assistant - general chairside (CDA), oral and maxillofacial surgery assistant (COMSA), dental practice management assistance (CDPMA), and orthodontic assistance (COA).

Who is eligible: Everyone has to be CPR Certified by either American Red Cross or Heart Association.

There are at least three pathways for each of the certificates, which are a mix of experience, schooling and prior certifications.

For all of the certificates, a high school or GED plus two full years of work experience in a dental office represents the minimal entry. Other pathways include graduation from a dental hygiene program accredited by the ADA Commission on Dental Accreditation or 500 hours of post-secondary education in oral and maxillofacial surgery.

Course of study required/Prerequisites: High school or GED plus work experience of two years. There is no prescribed course of study required, but reference materials are provided, along with sample type of questions and an examination outline.

Levels of Certification: Each is distinct and no levels exist. The life span is three years per each exam. Renewal is based on continuing education and payment of renewal fee.

There are two specialized exams that are now being offered as stand alone: the infection control (just introduced) and radiation health and safety exams. These cost less and are available for state agency use in qualifying or regulating dental assistants due to the increase in regulation in these areas.

Who manages: The Dental Assisting National Board.

How financed: Fees of $70 cover the cost of processing applications, exam administration and 1st year certification. Annual renewal fees were increased from $25 to $30 per year in 1992.

History: The committee did a Task Analysis over a 10 year period. Over 1500 tasks were included; a task was rated as to its criticality, frequency of performance and appropriateness by a large number of assistants. These are used to define content of exams and have been updated at least three times in ten years. This task analysis is not to be considered a curriculum guide or a set of educational objectives and DANB makes it clear that the tasks do not define what are legally permissible duties for an assistant.

In 1978 DANB conducted a three year open examination project. The reason was to reassess a policy dating back to 1960 that had closed off the opportunity for anyone to take the exams unless they had graduated from an accredited dental assistance program. The experiment showed that while those who had attended post-secondary training did have slightly higher scores, at a five to six year experience level, the passing rates approximated those of the ADA program's graduates. The Board has continued to support the multiple pathway approach for eligibility for some time.

A later study was undertaken to validate the certificate exam to establish the link of exam performance to clinical performance. The results are that passes on the exams did receive higher ratings on 17 of 18 scales, with only five being statistically significant (there were some limitations to the study). The data generally indicate that individuals with one year of experience (Pathway 2) were rated as highly as school (Pathway 1) after one year.

Organization: National Board for Certification of Dental Laboratories
3801 Mt. Vernon Avenue Alexandria, VA 22305 (703) 683-5263
Contact: Robert W. Stanley

System has been operating since 1957 with 9,000 certified and 4,000 Laboratories.

Organization gives written exams or bench exams (have to perform the work).

Requires minimum of H.S. diploma/GED or five years in industry.

Certification tests are divided into specialties, can take entire test or parts. Once certified they offer a fellowship program - not certification but an advancement.

Subject to state or federal OSHA registration (infection control, hazardous materials). Individuals do not have to be licensed to operate lab or be a dental technologist.

Organization: Joint Commission on National Dental Examinations (JCNDE)

Address and Telephone: 211 E. Chicago Ave., Suite 1846 Chicago Ill. 60611 ,(312) 440-2678

Contact: (Material sent by Commission on Dental Accreditation)

Context: Responsible for the development and administration of the National Board Dental Hygiene Examination.

Who is eligible: Closely intertwined with licensure community in the states. While licensure requirements vary, all jurisdictions have three types of requirements: 1) an educational requirement that includes acceptance of graduation from an accredited program by the Commission and the American Dental Association, 2) a written exam and 3) a clinical examination requirement. The National Board's examination is accepted in all states and is intended to fulfill the written examination requirement for licensure purpose, although some states will accept the exam only if earned in the last 10 -15 years.

Course of Study/Prerequisites: There are five paths for eligibility. A dental hygiene student in an accredited program within four months of issuance of a certificate; a graduate of one of the accredited programs; a graduate of a non-accredited program only if a letter is forthcoming from a dean of an accredited school, a director of an accredited program or the secretary of a board of dentistry of a U.S. licensing jurisdiction; a dental student; and a dentist.

Levels of Certification: Only 1

Who Manages: 15 member Commission includes dental schools, dental practice, state examining boards, dental hygiene and the public.

How Financed: in 1992 the fee is $75.00

Partners: Member of Commission on Dental Accreditation

Organization: American Association of Dental Consultants

919 Deer Park Ave. Minneapolis, MN (612) 832-9166

Contact: Dr. Bruce Keyworth

System has been operating for eight years. There are 28 certified and a membership of 300. Three or four new certifications are issued every year.

To qualify for the certification applicants must be a licensed dentist, have been in private practice for ten years or have five years of consulting experience, attend two workshops, complete a self-study course and pass a three hour exam.

Organization: National Board for Certification in Dental Laboratory Technology

3801 Mt. Vernon Avenue Alexandria, VA 22305 (703) 683-5310

Contact: Sandra Stewart

System has been operating since 1958 with 9,000 certified.

Offers opportunity to get additional specialties after you get CDT.

The organization offers a certification program based on education, work experience, written examination and performance examination. Recertification requires continuing education during a 2-year period. Must renew every year. Documented scientific credit, six hrs. undocumented credit. Can be through clinician approved by their office.

Organization's prerequisites are high school education, five years experience in a dental laboratory. If in recognized graduate program after two years you can take CDT exam to be certified

In 1991, 1,700 written examinations were administered.

The minimum total fee to obtain certification is $155.00. The written examination fee is $25.00 or $45.00 ($20 for a retake). The recertification fee is $64.00.

The certification operations are conducted in-house. The certification body is fully independent.

The states of Texas and Kentucky and a few others have regulations requiring a CDT in laboratory in order for it to be open.

Have continuing education-clinics given in technical field and they approve the programs.

Organization: American Medical Technologists (AMT)

Address and Telephone: 710 Higgins Road Park Ridge, IL 60068 (708) 823-5169

Contact:Gerard P.Boe Phd Executive Director

Context: AMT is a registry of clinical laboratory , medical and dental assistant personnel that is owned and operated by its members. The bylaws make it explicit the Registry will never attempt to bargain collectively for its members. There are over 21,000 members nationwide (including active, student, and associate members). AMT grants charters to state societies and a portion of the national dues are returned to each state. It is the largest independent certifying agency for the five current categories of occupations in the registry:1) Medical Technologist (MT),2) Medical Laboratory Technical (MLT) 3) Registered Medical Assistant (RMA) and two recently added are a Dental Assistant (DA) and the Phlebotomy Technician (PT). It also offers a clinical laboratory manager certification in conjunction with the Institute of Certified Professional Managers. Several states recognize AMT certification as a part of their licensure system. The average starting salary for an MT is $21,500; for the MLT, $16,500.

Who is eligible: Will vary by each of the categories but all require a high school degree or its equivalent, work experience (the lowest is for the PT - 1,040 hours in last three years). The MT level strongly encourages at least an AA degree or above. With a BA degree, at least one year of experience is required. With less than a BA, five years of experience are required. For the MLT, an AA degree and six months of experience are minimum. Relevant military experience is recognized throughout. Passage of test is required for all.

Course of study/prerequisites: Not absolute, due to the several different access paths; however, as one of the founding members of the Accrediting Bureau of Health Education Schools (ABHES), there is a strong bias to develop a common curriculum for all of the programs.

Levels of Certification: There is a career ladder system that allows progression from MLT to MT. All AMT registrants must revalidate certificates every five years. This can be done through accruing 70 - 100 hours of CEC in either formal provider approved education settings, self paced or professional development

How Financed: Fees for application ranging from $59 - $95 and annual renewal registration fee of $80 for the MT and MLT and $44 for the other two groups.

Who manages: AMT

Partners: The AMT works through the Accrediting Bureau of Health Education Schools, but will accept other schools that have been accredited by COPA and/or U.S. Dept. of Ed. and are members of the National Commission for Competency Assurance/ National Commission for Certifying Agencies.

History: About the time of WWI, individual training began to occur for clinical pathologists to perform laboratory tests; at that time, it was not uncommon to have individuals employed in laboratories who were not high school graduates. The well documented history of the organization shows a continuing struggle to establish the professional recognition. Early efforts were focused on the promotion of licensure requirements in the states, but this was apparently vigorously opposed by several other medical organizations. Also, the relationships with other organizations within the medical community have not always been easy, with more than one failed attempt in the history of the organization to merge, seek common accreditation procedures, define occupations and determine which would be separately recognized, and joint publications. The material for the Dental Assistant makes it clear that AMT is not connected to the American Dental Association and/or its collaborating organizations.

Currently discussions are underway with state licensure and agencies and other organizations regarding the development of national standards for clinical laboratory personnel because none exist that are commonly recognized.

Organization: American Physical Therapy Association (APTA)

Address and Telephone: 1111 North Fairfax St. Alexandria, Va 22314-1488, (703) 684-2782

Contact: Jody S. Gandy PhD, PT, Director of Clinical Education/Education Systems, Division of Education

Contact: Patrima Cox

Context: Physical therapists' education programs have been recognized since 1928. For some time AMA (discussed above) had the responsibility for the accreditation programs. In 1977 APTA established its own Commission and was recognized by COPA and the U.S. Dept. of Education as a separate program. Since 1983, the Commission on Accreditation of Physical Therapy Education (CAPTE) has been the sole accrediting body for entry level education for the physical therapist (PT) and the physical therapist assistant (PTA) in the U.S. There are two separate sets of criteria for the two occupations. The estimated number of PT graduates in 1991 was 4533. For PTA, 1,805 graduated. The APTA represents more than 53,000 individuals.

A resolution in 1980 by APTA established a goal that, by the end of that decade, entry level requirements for the profession would result in a post-baccalaureate degree. By 1992, 136 institutions housed accredited or developing entry level programs at the post BA level. For the PTA, 81% of the programs are located in two-year colleges, 17% are located in universities, and 2% in other type of institutions. Seven percent are in institutions that have a physical therapy entry-level education program.

The organization offers seven certification programs, based on education, work experience, and written examination. A recertification program is being developed.

In 1991, 185 written examinations were administered.

The minimum total fee to obtain certification is $235.00. The written examination fee is $500.00.

Some certification activities are contracted out. The certification body is part of an association, with administrative independence.

Organization: American Nurses Credentialing Center
600 Maryland Avenue, SW, Suite 100 W Washington, DC 20024-2571
Contact: Marie Reed

The organization offers 23 certification programs, based on education, work experience, and written examination. Recertification is based on a 5-year period.

In 1991, 15,814 written examinations were administered.

The written examination fee is $260.00 ($120 for assn. member). The recertification fee is $230.00 ($90 for assn. member)

The certification body is part of an association, with administrative independence.

Organization: ACNM Certification Council
8401 Corporate Drive, Suite 470 Landover, MD 20785
Contact: Karen Tatum

The organization offers one certification program based on education, written examination, and RN licensure. The certification operations are fully independent and administered in-house.

The examination fee is $385.00

Organization: American Occupational Therapy Certification Board
4 Research Place, Suite 160 Rockville, MD 20850-3226
Contact: Edna Wooldridge

The organization offers two certification programs, based on education, work experience, and a written examination.

In 1991, 4,441 written examinations were administered.

The written examination fee is $225.00.

Some certification activities are contracted out. The certification body is fully independent.

Organization: American Board for Certification in Orthotics & Prosthetics, Inc.
1650 King Street, Suite 500 Alexandria, VA 22314-2747
Contact: Mimi Wong

The organization offers certification based on education, work experience, written examination, performance examination, and written simulation. Recertification requires continuing education during a 5-year period.

In 1991, 246 written examinations were administered.

The minimum total fee to obtain certification is $1,200.00. The fee for the written examination is $200.00. There is an annual fee of $200.00.

Some certification activities are contracted out. The certification body is fully independent.

Organization: AACN Certification Corporation
101 Columbia Aliso Viejo, CA 92656-9921
Contact:

AACN offers three different certifications in critical-care nursing: neonatal, pediatric and adult.

To be eligible for certification applicants must be currently licensed Registered Nurses from states or territories using the NCLEX examination for licensure.

Certification fees are $150.00 for the adult CCRN, and $175 for the pediatric and neonatal.

The certifications can be earned by passing an exam. Exams are offered in 45 states and the District of Columbia

AACN Certification Corporation is a legally separate entity having its roots in AACN, the society of critical care nurses.

Organization: Board of Certification in Anesthesiology
804 Main Street, Suite E Forest Park, GA 30050 (404) 363-8263
Contact:

System has been operating 41 years with an estimated several thousand certified and a membership of 575. Normally 50 - 75 examined annually.

The organization offers two specialties of certification based on medical education, field certification, and written and performance examinations. Subspecialty certification is also available.

Organization: National Commission for the Certification of Acupuncturists (NCCA)
Address and Telephone: 1424 16th St. N.W. Suite 501, Washington D.C. 20036 (202) 232-1404
Contact: Lauretta C. Jenkins, Deputy Director

Context: NCCA was launched in the U.S. in 1985, though acupuncture was introduced in America over 100 years ago. Its purpose, in part, is to develop nationally recognized standards. About 3000 American Acupuncturists have been certified in last seven years. There are 21 states that require licensure of the profession and 18 of those accept the NCCA exam in their licensure process.

Who is eligible: Must be 18 years of age. A minimum of three full years of acupuncture schooling or 4,000 hours of apprenticeship. Must have four years of acupuncture practice with a minimum of 500 patients' visits per year on a minimum of 100 different patients.

Course of Study/Prerequisites: Not for the exam itself, but the school curriculum that is recognized is explicit and school transcripts are required.

Levels of Certification: Currently only one and recertification is granted every two years. In 1989, the profession requested the development of a certification process for Chinese Herbology and this is currently under development.

In 1991, 450 written examinations were administered.

The minimum total fee to obtain certification is $695.00. The fee for recertification is $195.00.

The certification operations are conducted in-house. The certification body is fully independent.

Who manages: The Professional Examination Service is responsible for the development and administration of the exam.

Partners: NCCA works with two other organizations: The National Accreditation Commission for Schools and Colleges of Acupuncture and Oriental Medicine and the National Council of Schools of Acupuncture and Oriental Medicine, both of which contribute members to the NCCA board. NCCA is certified by the National Commission for Certifying Agencies and is a member of the National Association of Certifying Agencies.

Assessment: There are two written portions of the exam that are competency based and multiple-choice plus a practical exam. It is administered in English, Chinese, Japanese and Korean. The examination blueprint represents a broad consensus on the knowledge and skills necessary for the effective practice of acupuncture. Creating the consensus began in 1982 with surveys of prominent acupuncturists and educators conducted by task-forces. Then a panel of expert level acupuncturists trained in more than eight countries became involved in identifying the skills required for each task. This role delineation was validated by a survey containing nine different scales. Over 300 acupuncturists of every identifiable ethnic background, type of training, school of thought, level of experience and style of practice in various parts of the United States were involved in this validation exercise. Test items are keyed to the validated role delineation and every item is reviewed at least six times and is carefully rated according to scales designed to ensure fairness and validity.

Beginning in 1991, in order to be nationally certified, an individual must pass a separate 20 question written exam focused on clean needle technique.

A practical exam has been added, the Practical Examination of Point Location Skills (PEPLS), in part due to the needs of state regulatory agencies. There was a piloting of this performance assessment in

1989 that included a validation study. Statistically the reliability was very high and there was an appropriate differential between expert performance and candidate performance. As a result of this piloting, the overall certification exam was expanded to include the practical exam.

NCCA methodology has met all reasonable tests for validity. The analyses of exam results have demonstrated an extremely high reliability, between 92% - 96% on split-half and KR 20 scales for every examination.

To date the direct cost of developing the written examination is over $400,000, without counting the dollar value of donated time of members of the profession which can only be estimated in the thousands of hours. The cost of the PEPLS has brought the total investment to over $600,000.

Organization: National Council for Therapeutic Recreation Certification (NCTRC)
Address and Telephone: 49 South Main St. Suite 001, Spring Valley, NY 10977 (914) 356-9660
Contact: Peg Connolly, PHd Executive Director

Context: NCTRC's stated purpose is to protect the public and promote the quality of therapeutic recreation services. It is recognized by accrediting bodies and state and federal regulators (mainly vocational rehabilitation) as the credentialling authority for therapeutic personnel. It has a disciplinary committee that has "decertified" individuals.

Over 32,000 positions exist in the field. NCTRC has 12,000 certificants.

Who is eligible: Only those meeting the course of study discussed below.

Course of Study/Prerequisites: For the CTRS there is a requirement of successful completion of upper division or graduate level course work, including at least 10 full weeks of field placement.

Levels of Certification: There are now only 2. The Certified Therapeutic Recreation Assistant (CTRA) is classified as a paraprofessional position, and requires at least an AA degree in the field. The Certified Therapeutic Recreation Specialist (CTRS) is the professional and, as of 1990, this includes passing a test.

Recertification is contingent upon CEU that must now be directly tied to the knowledge areas identified in the job analysis study of 1988 (see below), and includes a minimum of 360 hours within a five year period. Academic course work, professional publication and presentations, and professional service are all included.

How Financed: $50.00 for determining eligibility and $100.00 for the exam.

Partners: The relationship to educational institutions is through an "announcement process" to both schools and potential applicants. For example, after study by an ad hoc committee appointed by the board, prerequisite course work standards will be changing for applicants applying for certification. There is a period of four years prior to the change in course work for certification taking effect, thereby giving universities time to make appropriate changes. Definitions of acceptable internships have been aligned to the job analysis conducted in 1988 and educational institutions are expected to assure the internships organized accordingly.

The relationship of certification process to current practitioners is rather tight in that internships are only allowed under the supervision of a CTRS level supervisor. (This presumably has a substantial geographic access impact on the profession.)

The Council, while independent, has strong links with the American Therapeutic Recreation Association and the National Recreation and Parks Association. They look to these two networks as a place to seek employer involvement, as well as to promote the certification program.

The Council is currently in the process of seeking accreditation by the National Commission for Certifying Agencies (NCCA).

History: There has been certification in the field for over 30 years. Three separate organizations merged their efforts during this period pulling together the strands of therapy known as "hospital recreation" with a branch of the national Recreation and Park Association. It took over 20 years to sort out roles and relationships. Assistance came from the federal government through grant monies from the Vocational Rehabilitation Administration to help develop training programs through seven universities. The first standards were for three positions in the hospitals and there was a mix of education and work experience. By the early 1970's the hospital criteria was considered too limiting and there was a change in nomenclature plus an expansion of levels to five with the first three requiring a college degree, one an AA and the assistant position requiring only experience. Essentially these were registration programs.

In 1980 the wheels started turning to create an independent and autonomous certification Council and also collapse the number of positions to two (Specialist and Assistant). Or said another way, one professional position and one paraprofessional position which more closely parallel other credentialling programs such as those for occupational and physical therapies. For the paraprofessional position, at least an AA degree or completion of the 750 hour NTRS sponsored training program or at least four years of experience was required for registration.

Standards themselves have changed substantially in the past decade, or more precisely, the criteria of the standards have changed. One of note is the requirement for field experience under the supervision of someone already certified.

Issues that this Board, like many others, has grappled with over the years include developing a preceptor program, only recognizing accredited program graduates, and whether or not to develop tests. It was not until the beginning of the 1990's that testing came into the equation. (see discussion of occupational analysis below).

It was not until 1986 that full time staff was hired to manage the processes.

Occupational Analysis: In 1987, ETS was given a contract to conduct a job analysis for Therapeutic Recreation Specialists. The task was to delineate required entry-level competencies and develop test specifications. The analysis took approximately a year and over 1800 certified professionals had input into the development of the skills inventory. There was a 12 person national advisory committee composed of individuals in a variety of clinical and community practice settings.

The process began with a review of 300 job descriptions and review of curriculum guides and other literature. Next there was a set of on-site interviews in one labor market, ranging from hospital settings to local recreation departments. After development of a draft inventory and review by national advisory committee, a revised inventory, including rating scales to evaluate the importance of each task, was developed. This was then piloted by several professionals across the country. A random sample of certified professionals' views were solicited through a mail survey to verify the importance factors. The rate of return was 47%.

The result of the analysis listed nine broad categories of job dimensions and eight broad categories of job knowledge as important to entry level job performance. Fifty-seven professional responsibilities were detailed under job dimensions and 97 knowledge areas. They also found an "almost unbelievable consensus on the importance ratings" apparently discounting often heard comments of "setting split" and regional differences.

As a result of this effort, it was determined that there was a strong need for an examination. ETS was given a contract to develop the test, and again volunteers from the field were used to help construct over 750 items.

Organization: American Board of Medical Microbiology (ABMM)
Address and Telephone: 1325 Massachusetts Avenue,NW, Washington D.C. 20005, (202) 737-3600
Contact: Rori Ferensic

Context: ABMM was established in 1959, under the auspices of the American Academy of Microbiology (AAM), to test the microbiologist seeking to direct public health or clinical microbiology laboratories. There are four specialty areas in either medical or public health microbiology, mycology, parasitology, and virology. The AAM also supports the testing of Medical Laboratory Immunology through a separate board focusing on the specialty of immunological diagnosis. Additionally there is a National Registry of Microbiologists for entry and supervisory microbiologists.

Who is eligible: A minimum of a BS degree in biological sciences can start the person on the path for the Registry. For the two Board programs, an earned doctorate plus experience are required.

Course of Study/Prerequisites: No absolute course of study is required, but course work is screened as a part of the eligibility process. Varying degrees are recognized as relevant, (e.g. medical, veterinary, nursing, biomedical, dental)

Levels of certification: For the Registry: Ranges from Conditional Registrant for a BS degree with no experience to a Registered Microbiologist that has two pathways (three years of experience with degree in other than biological sciences, or one year with degree in biological sciences), Specialist also has two pathways (Biological degree with at least seven years of experience or post-BA degree work and four years of experience). Recertification for ABMM requires 150 CE hours or a written exam during a 3-year period. Recertification for NRM requires 90 or 120 CE hours or a written examination during a 5-year period.

In 1991, 183 written examinations were administered.

There is a voluntary recertification program every five years.

How Financed: For the Registry, there is an examination fee of $75. Registrants remain active with payment of $27 per year for each certificate held. There is no charge for recertification if the individual has remained active. For the Board Exams, there is a $400 fee and there is a requirement for recertification every three years.

Who manages: The two boards and the National Registry of Microbiologists; this includes maintaining a list of approved proctors for the exams, however, the candidate must make the arrangements with the proctor.

Organization: Healthcare Sterile Processing & Distribution Personnel
P.O. Box 558 Annandale, VA 08801
Contact: Nancy Chobin

The organization offers a certification program based on education, work experience, and a written examination. Recertification requires either a written examination or the accumulation or 100 points earned through work experience and continuing education during a 5-year period.

In 1991, two written examinations were administered.

The written examination fee is $95.00 and the recertification fee is $95.00.

Most certification activities are contracted out. The certification body is fully independent.

Organization: The American College of Health Care Administrators
325 South Patrick Street Alexandria, VA 22314
Contact: Barbara Field

The organization offers a certification program based on work experience, written examination, and performance examination. Recertification requires CE hours and professional involvement during a 5-year period.

In 1991, 17 written examinations were administered.

The minimum total fee to obtain certification is $425.00. The written examination fee is $125.00. The fee for recertification is $250.00.

Some certification activities are contracted out. The certification body is part of an association, with administrative independence.

Organization: Commission on Rehabilitation Counselor Certification
1835 Rohlwing Road, #E Rolling Meadows, IL 60008
(708) 394-2104
Contact: Ms. Eda Holt

System has been operating for 20 years with 2,000 annually certified.

Organization gives written exam.

Education and work experience are considered as well.

Organization: American Association for Counseling and Development/ National Board for Certified Counselors

5999 Stevenson Avenue Alexandria, VA 22304 (703) 823-9800

Contact: Theodore J. Remley, Jr.

Organization's prerequisites are a Master's degree in counseling or related area. Specific coursework required.

There is a distinction between those individuals accredited by CCRAFT who are then certified as soon as they finish their master's degree and those not so accredited. If not accredited right away, then two years experience (supervised) is required after completing the degree.

Organization offers certification in three practice areas:

Career counselor-requires exam others do not

Gerontological counselor

School counselor

Currently 38 states have licensing laws regulating counselors. 30 states use their exam for licensure.

Organization: American Association for Counseling and Development - Board for Rehabilitation Certification (Rehab. Counselors)

Contact:

Educational and employment criteria needed to pass their exam. 10 different categories - degree determines work experience needed.

Some states require counselors to have national certification. Some employers require this also.

Organization: Academy of Clinical Mental Health Counselors

5999 Stevenson Avenue Alexandria, VA 22304

Contact: Adrienne Harris

The organization offers two certification programs, one for clinical counselors and one for clinical supervisors. Certification is based on education, work experience, and both written and performance examinations. The requirement for recertification is 100 CE hours during each five year period.

System has been operating since 1979 with 2,500 certified and 200,000 members.

Organization operates skills certification based on an exam. Also requires candidates to send in a tape recorded counseling session.

Education: Minimum of a master's degree in counseling or a related field including 60 semester hours of graduate work in counseling. For the counselor certification two years clinical work experience is required; for the clinical supervision certification two years of supervisory experience.

In 1991, 200 written examinations were administered. The written examination fee is $75.00 and the recertification fee is $60.00. There is an annual fee of $35.00. The certification operations are fully independent and are conducted in-house.

Organization: American Board of Clinical Chemistry
c/o AACC 2029 K Street, NW Washington, DC 20006
Contact: Penelope Jones

The organization offers two certification programs based on education, work experience, and written examination. A program for recertification is still under consideration.

In 1991, 25 written examinations were administered. The minimum total fee to obtain certification is $400.00. Some certification operations are contracted out. The certification body is fully independent.

Organization: American Board of Opticianry
10341 Democracy Boulevard Fairfax, VA 22030
Contact: Nancy Roylance

The organization offers two certification programs based on written examination. There is a required number of CE hours during a 3-year period for recertification, for which re-examination is an alternative.

In 1991, 5,017 written examinations were administered. The written examination fee is $95.00 and the recertification fee is $45.00. Some certification activities are contracted out. The certification body is fully independent.

Organization: American Medical Directors Association
10480 Little Patuxent Parkway, Suite 760 Columbia, MD 21044
Contact: Claire Jefferson

The organization offers a certification program based on education and work experience. The requirements for recertification are professional experience, continuing medical experience, and administrative experience during a 5-year period.

The minimum total fee to obtain certification is $325.00. The recertification fee is $300.00. The certification operations are conducted in-house. The certification body is part of an association, with administrative independence.

Organization: American Sociological Association
1722 N Street, NW, Washington, DC
Contact: Janet Mancini Billson

The organization offers six certification programs, based on education, work experience, and written examination. Recertification requires education during a 1-year period.

In 1991, five written examinations were administered. The certification operations are conducted in-house. The certification body is fully independent.

Organization: American Speech Language Hearing Association
10801 Rockville Pike Rockville, MD 20852
Contact: Zenobia Bagli

The organization offers two certification programs based on education, work experience, and written examination. In 1991, 2,500 written examinations were administered.

Some certification activities are contracted out. The certification body is part of an association, with policy-making independence.

Organization: Board for Orthotic Certification
100 Penn Street, Room 234 Baltimore, MD 21201
Contact: Sheila Curry

The organization offers two certification programs based on education, work experience, written examination and performance examination. Recertification requires eight CE hours per year.

In 1991, 10 written examinations were administered. The minimum total fee to obtain certification is $400.00. There is an annual fee of $275.00.

Some certification activities are contracted out. The certification body is fully independent.

Organization: International Board of Lactation Consultant Examiners
3400 Charleson Street Annandale, VA 22003
Contact: JoAnne W. Scott

The organization offers a certification program based on education, work experience, written examination and a simulation examination. Recertification requires continuing education or an examination during a 5-year period.

In 1991, 800 written examinations were administered.

The minimum total fee to obtain certification is $370.00. The recertification fee is $125.00.

Some certification activities are contracted out. The certification body is fully independent.

Organization: National Association of Alcohol & Drug Abuse Counselors
3717 Columbia Pike, Suite 300 Arlington, VA 22204
Contact: Bill Malone

The organization offers a certification program based on education, work experience, written examination, and state certification. Recertification requires 60 CEUs, continued employment in field, and state certification maintained during a 2-year period.

In 1991, 100 written examinations were administered.

The written examination fee is $175.00 ($95 assn. member). The recertification fee is $75.00 ($40 assn. member).

The certification operations are conducted in-house. The certification body is fully independent.

Organization: National Contact Lens Examiners

10341 Democracy Lane Fairfax, VA 22030

Contact: Nancy Roylance

The organization offers a certification program based on a written examination. Recertification requires a certain number of CE hours during a 3-year period, with the alternative of re-examination.

In 1991, 1,450 written examinations were administered.

The written examination fee is $125.00. The recertification fee is $66.00.

Some certification activities are contracted out. The certification body is fully independent.

HEATING AND COOLING

Organization: Hydronics Institute

Address and Telephone: 35 Russo Place, Berkeley Heights, New Jersey 07922 908-464-8200

Contact:

Context: Represents manufacturers of heating and cooling equipment. Established in 1915. Manufacturers of steel, cooper, or cast iron boilers for space heating and cooling and heating units such as radiators are primary members. Associate members include manufacturers of accessories and controls to be used in/with such systems. There are also semi-independent groups for burners and radiant panels. The Better Heating - Cooling Council serves as the information bureau for the industry.

The major work of the Institute is geared towards setting the product standards for the industry and then testing of the products, including substantial attention to radiation. The Institute standards and product testing programs are recognized by government.

The organization has maintained a strong relationship with scientific and engineering societies as well as with sister trade associations.

Training is a key function. They have been running the Institute for Boilers and Radiators for over 40 years (I=B=R).

Who is eligible: There is no certification program sponsored by the Institute. However, courses ranging from 1-3 days are sponsored by I=B=R schools across the country with a certificate of completion awarded. All classes are full day sessions. Residential Heating, Commercial Heating, Residential Controls, Radiant Heating, Residential Controls, Radiant Heating, and an annual seminar on Hydronics are offered

Course of study required/Prerequisites: The Institute produces books and classroom material that are used not only for their schools, but are also sold to public and private trade schools. The materials include technical guides that are used to specify the design standards for heating and cooling installation. Engineering text books use the materials as a basic source.

Levels of Certification: N/A

There have been more than 55,000 students who have taken the courses since they began in 1950 with 50% employed by contractors, 33% by wholesalers, and the remainder by manufacturing firms, fuel companies, etc.

There is no way to assess how many students in public and private schools use this material.

Who manages: Hydronics Institute.

How financed: Fees for testing products, the I=B=R school fees for 1992 - 93 range from $150 for a one day course to $295 for a three day residential heating course.

Organization: Air Conditioning Contractors of America
1513 16th Street, NW Washington, DC 20036 202-483-9370
Contact: James P. Norris

System has been operating less than one year. Membership is 3000.

The organization offers certification based on written examination. There are three skill levels established by industry consensus.

HOSPITALITY

Organization: The National Association of Truck Stop Operators (NATSO)
Address and Telephone: 1199 N Fairfax St. Suite 801, Alexandria, VA 22314 (703) 549-2100
Contact:

NATSO provides the standard array of membership services, and through an agreement with the National Restaurant Association Education Foundation (see NRAEF), offers its members an exam-based certification program for Applied Foodservice Sanitation.

Organization: National Food Brokers Association
1010 Massachusetts Avenue, NW Washington, DC 20001 202-789-2844
Contact: Robert C. Schweger

System has been operating four years.

There are three levels of business skills within the system, with approximately 70 people certified each year.

Organization: Education Foundation of the National Restaurant Association
250 S. Wacker Drive, Suite 1400 Chicago, IL 60606 312-715-1010
Contact: Mary Gajewski

System has been operating for two years, with 500 managers certified under the program and 50,000 under the education program.

The system is a combination of hands-on training and examinations. There is one certification level for Food Service Managers.

There is a choice of options between more work/less education or vice versa.

Some jurisdictions require Sanitation Certification.

Organization: American Culinary Foundation
Ten San Bartola Road P.O. Box 3466 St. Augustine, FL 32085-3466
904-824-4468
Contact: L. Edwin Brown

System has been operating 20 years, with an estimated 7,000 certified and a membership of 23,000.

The organization offers an on-the-job apprenticeship training program for cooks and pastry cooks lasting three years, with a written examination. There are 10 skill levels in the system, chosen to represent actual jobs in the workforce.

Prerequisites for the program are education points, experience points, professional experience, and membership in an organization. The requirements vary for each of the certification levels.

Recertification is required every five years.

Organization: American Hotel and Motel Association
1201 New York Avenue, NW, Suite 600 Washington, DC 20005
202-289-3100
Contact: Kenneth F. Hine

System has been operating more than 10 years with an estimated 3000 certified and a membership of 12,000.

The organization offers certification in a program based on education, two years work experience, and a written examination. There are 5 - 6 skill levels corresponding to important levels of management supervision in the industry.

Organization: American Home Economics Association
1555 King Street Alexandria, VA 22314
Contact: Mary Beth McFadden

The organization offers a certification program based on education and a written examination. Recertification requires 75 CE hours during a 3-year period or re-examination.

In 1991, 50 written examinations were administered.

The written examination fee is $150.00. There is an annual fee of $30.00.

The certification operations are fully independent, and are conducted in-house.

Organization: International Institute of Convention Management
9200 Bayard Place Fairfax, VA 22032
Contact: Andrea Sigler

The organization offers two certification programs, based on education, work experience, and a written examination. Recertification requires continuing education during a 5-year period.

The minimum total fee to obtain certification is $1,500.00 - $2,000.00. The recertification fee is $100.00.

The certification operations are conducted in-house. The certification body is fully independent.

HOUSING AND REAL ESTATE

Organization: American Association of Homes for the Aging (AAHA)

Address and Telephone: 901 E Street, NW, Suite 500 Washington, DC 20077-8300 (202) 508-9435

Contact: Melanie Hughes, RHP Program Manager

Context: AAHA established a certification program that is designed to go beyond property management and to address the total residential environment that meets the unique needs of elderly residents.

Who is eligible: Must be 21 years of age and have a college degree or three years of experience in the retirement housing field or long-term care administration, or have current status as a senior housing administrator, assistant administrator, or administrator-in-training.

Course of Study/Prerequisites: Must complete three 15-hour core courses, plus 15 hours of elective credits that meet the approval of AAHA. The core courses must be AAHA's. The other 15 hours can be taken through other providers, if the provider's training program has been approved by AAHA.

Levels of Certification: Only one, the Retirement Housing Professional. Must attend 22 hours of continuing education every two years to maintain certification.

The certification operation is conducted fully in-house. The certification body is part of an association with administrative independence.

How Financed: Fees: application, $149; all three core courses, $1,165; exam, $208; management plan, $220; and biannual renewal, $450. For members of AAHA, there is a $50 discount per fee.

Assessment: Must pass an exam, conduct a facility assessment, and receive approval of the Comprehensive Management Plan through a peer review. Additionally, must complete three years of experience in a retirement housing or long-term care setting; or four years of related experience and an internship at an AAHA approved facility. For re-certification, graduates are randomly audited and must be able to verify participation in programs they listed.

Organization: National Apartment Association (NAA)

Address and Telephone: Suite 900, 1111 14th St. N.W., Washington, DC, 20005, 202/842-4050

Contact: Ramona Hadley, Director of Education

Context: There are 42,000 members in 160 affiliated local and state apartment associations. They represent apartment owners, investors, builders, developers, and lenders. They manage approximately three million units in U.S. In the certification programs in 1992, there were 13,173 designates, 7,774 candidates and 1200 participated in professional seminars during the year. The three certified positions are: Apartment Manager (CAM), Apartment Maintenance Technician (CAMT), and Apartment Property Supervisor (CAPS). CAPS Property Supervisor purpose is to bridge gap between on-site housing and executive management for multi-family units. Individual must be responsible for more than one community, with supervisory responsibility. CAMT is promoted as the most practical way to reduce operating expenses, since maintenance expenses are the largest controllable element in an operating budget. CAM focus is on on-site management techniques and is approved by HUD as a certifying program.

Who is eligible: Two years of apartment management are required to qualify for designation for the CAM. Must be nominated by affiliate association. There is a two year candidacy period. Only national accreditation board can grant candidacy for the CAMT. Individual then has two years available to complete requirements.

For the maintenance technician, the individual must have working knowledge of all building trades, landscaping, local codes, etc. There do not appear to be any absolute cutoffs, except one year of building maintenance experience. Course work is being revised and in 1993 will consist of 156 hours covering lectures, hands-on and demonstrations.

Who manages: The National Apartment Management Accreditation Board manages the system in concert with the Education Committee of NAA. They set the standards and prepare the exam.

How financed: Fees for courses -- no national information available. The individual is told to contact local affiliate for fee and schedule information.

Organization: National Uniform Certification of Building Operators, Inc. (NUCBO)

Address and Telephone: PO Box 2596 Joliet, IL 60434

Contact: Lawrence Berkes, President

Context: Those working in the industry must be familiar with a wide array of national, state and local building and health and safety codes. NUCBO acts on a national level for Building Operators to manage the voluntary uniform certification program for building managers, operators, engineers, maintenance instructors and examiners. The organization maintains a national registry, acts as advisor to educational entities engaged in teaching building operation and technology, maintains the uniform qualifications and standards, grants and issues commissions to examining agencies applying and qualifying, and maintains registry of qualified examiners.

Who is eligible: Minimum age is 18 with in no case less than three months job experience. Most levels of certification require substantially more experience and technical education.

Course of Study/Prerequisites Required: NUCBO publishes a standard curriculum for certification purposes, but it is not a firm prerequisite.

Levels of certification: In two major tracks (Building and Maintenance Engineers), there are five levels of classifications (from 4th class to chief) within each track. The 4th class positions do not require a high school degree, but do require at least three months work experience for the Maintenance track, and at least one year of experience and unsupervised work on certain levels of boilers and refrigeration for the Building Engineer track. There are slight variations between the two tracks regarding continual experience and time in grade prior to eligibility for the next level of certification. Essentially no one can receive the highest designation, chief, without at least 10 years of experience and formal technical education.

There are also certifications for building electrician (four levels) boiler operator (five levels) and examiners and instructors.

Each level of certification requires passage of a written exam.

How financed: Examination fees that vary slightly by level, with the lowest being $12.00 for 4th level exams, up to $25 for the chief's exam. Renewal fees range from $5 to $9.

Who manages: NUCBO

Partners: NUCBO's material notes that it is not affiliated with any organization, associations, or agencies, but assists any organization et. al. through the administration of the examinations to determine the competence of building operators.

Organization: American Society of Real Estate Counselors
430 N. Michigan Ave. Chicago, IL 60611 312-329-8427
Contact: Mary Fleischmann

System has been operating for 40 years and has an estimated 1,000 certified and 1,000 members.

Membership-by-invitation organization which gives members a designation (Counselor of Real Estate). No examination; invitations are based upon reputation, expertise, and position.

Credentials are evaluated by a committee.

Single designation only.

This is a national designation that supplements state licensure as an additional credential.

Education program for members. Now developing a basic course in real estate counseling.

Organization: National Property Management Association
220 Patricia Avenue Dunedin, FL 34698 (813) 736-6707
Contact: James Lerch

System has been operating for 10 years with 3,000 certified and 2,500 members.

Written exam evaluated by peers. Test for knowledge gained through experience. Certify property managers, property administrators, property specialists.

First level - requires organizational membership; second level - three years in property management; third level - seven years in property management

Organization: Commercial Investment Real Estate Council
430 N. Michigan Avenue Chicago, IL 60611 (312) 321-4460
Contact: John Nixdorf

System has been operating since 1970 with 3,500 certified and 3,500 members.

Organization gives written exams. They also certify commercial and investment real estate brokers.

Organization requires 18 credit hours of education (three courses at three credits each plus nine elective credits).

Submit documentation of qualified real estate transactions.

Requires state licensure.

Organization: Institute of Real Estate Management
430 N. Michigan Avenue Chicago, IL 60611 (312) 329-6000
Contact: Joyce Kopess

System has been operating since 1934 with 500 certified and 10,000 members.

Organization gives several written exams. Certifies managers of commercial and residential property complexes.

Organization looks at a combination of education and experience. Requires a portfolio of properties managed plus three courses offered through the Institute.

Some states require a real estate license.

Also offers a series of courses through various universities around the country.

Organization: Residential Sales Council
430 N. Michigan Avenue, #500 Chicago, IL 60611 (312) 670-3780
Contact: Veneda Manora

System has been operating since 1970 with 20,000 certified and 35,000 members.

Organization gives written exams after each course. Certifies sales associates in residential real estate.

Candidate must take three out of eight courses offered through state association. Need to reach a certain level of production or volume in sales; and have 10 years experience or be a graduate of GRI (Graduate Realtors Institute).

State real estate license required.

Organization: Real Estate Brokerage Council
430 N. Michigan Avenue Chicago, IL 60611-4092 (312) 670-4092
Contact: Darren Tristano

System has been operating since 1968 with 360 annually certified and over 5,300 members.

14 days of course work with written exams offered after each day. Certifies real estate brokerage managers.

Candidate must be a dues-paying state association member and needs two consecutive years of experience as a real estate brokerage manager.

State-required brokers license.

Colleges use the organization's materials.

Organization: Realtors Land Institute

430 N. Michigan Avenue Chicago, IL 60611 (312) 329-8440

Contact: Debbie Martin

System has been operating for 45 years with 853 certified and 1,400 members.

Written exams are offered by state chapters. Two programs are offered.

They have one program based on education and one program based on five years of experience plus attainment of $5.0 million in sales.

Organization: Building Owners and Managers Association International

1201 New York Avenue, #300 Washington, DC 20005 (202) 289-7000

Contact: Mark W. Hurwitz

System has been operating for 22 years with 5,000 certified and 7,500 - 10,000 members.

Organization has certification program based on exam and work experience requirements.

High school education requested but not enforced. A candidate is put on probationary status if he/she doesn't have a high school education.

Organization has three programs: property management - requires exam and work experience, 24 criteria for industry related skills, must have 15 of the 24. Require three years of work experience and a minimum portfolio managing 40,000 square feet. two other programs (one is systems maintenance) - Must pass an exam.

For property management, the candidate does not have to be certified in a state. Systems maintenance - courses help to meet state licensure requirements.

Serve 45% of the association. The rest of the individuals in programs are in the real estate market. Programs offered in colleges and individuals can receive college credit.

Organization: Building Service Contractors Association

10201 Lee Highway, Suite 225 Fairfax, VA 22030 (703) 359-7090

Contact: Robin Fowler

System has been operating since 1978 with 500 certified and 2,500 members.

To obtain certification, one must pass an eight-hour written exam. The association provides study materials and training packages to help applicants prepare for the test.To apply for the lower level certification, one must have one year of experience in the industry and one year of management experience. To apply for the higher level certification, one must have five years experience in the industry and three years of management experience.

The association offers two levels of certification. The lower level is geared towards supervisors and managers. The higher level certification is geared towards presidents and owners of office cleaning companies. The higher level test includes topics such as tax law and insurance.

No state licenses are required.

INFORMATION MANAGEMENT

Organization: Office Automation Society International

Address and Telephone: PO. Box 374 Mc, Lean, Va 22101
(703) 821-6650
Contact: David Kahn, Executive Director

Purpose of organization and certification system: A professional society that cuts across industry sectors. The certification program was launched in 1986. It is based on evaluation of education and experience, scope and level of responsibility and professional activity. A written exam is not required. OASI membership is not required.

Who is eligible: Whoever applies and meets the following criteria: obtain 110 points out of a possible 200 points based on Formal Education 40, Continuing Education 40, Work Experience 50, Managing peiple 20, Function Management 20, Publications 12, Presentations 12, and Professional Recognition 6.

Course of Study Required/Prerequisites: None, per se, except that the weights on the certification criteria mean that no one just entering the field could be eligible. It would be almost impossible to earn the necessary points without a minimum of five years in the field, and closer to 10 seems likely. For recertification, it is now required that continual formal training occur.

Levels of Certification: Only one, but must be renewed every three years. There must be continual professional education and evidence of remaining current in the field.

Who manages: The Professional Certification Council of OASI

How financed: $135 for members, $185 for non-members

INSURANCE

Organization: Self-Insurance Institute of America (SIIA)

Address and Telephone:17300 Redhill Avenue, Suite 100, Irvine, CA 92714 (714) 261-2553
Contact: James A. Kinder, Executive Vice President

Context: The organization brings together three principal entities of the self-insurance industry -- employers, administrators, and reinsurance companies and other interested parties. They have recently established an educational foundation as an affiliate. This entity will be responsible for statistical research and granting educational scholarships for the industry. It does not have a separate certification program; however, it awards continuing education requirements that are accepted by other organizations that have professional designations (CLU, CPCU,CPA,RLM, etc.).

Organization: Certified Claims Professional Accreditation Council

P.O. Box 44110 Ft. Washington, MD 20749 301-292-1988
Contact: Dale L. Anderson

System has been operating one year with an estimated 200 certified and a membership of 200+ Expect to certify 15 per year.

The organization offers one level of certification based on education, work experience, and a written examination.

Organization: Casualty Actuarial Society
110 North Glebe Road Suite 600 Arlington, VA 22201 (703) 276-3100
Contact: Michele Lombardo

System has been operating since the 1950's with 1,121 certified and 1,928 members.

The society administers a series of ten exams over several years. No requirements, but most prospective members have bachelor's degrees and work in the field.

To become an associate member, one must pass seven of the ten exams and complete a one-day seminar on professionalism (ethics). To become a full member, one must pass all ten exams. Some universities use materials developed by the society.

Organization has no educational requirements, but most prospective members have bachelor's degrees and work in the field.

Organization: Professional Insurance Agents
400 N. Washington Street Alexandria, VA 22314 (703) 836-9340
Contact: Carla Kelly, CPSR Administrator

System has been operating since 1988 with 3,000 certified.

To become a certified professional service representative (CPSR), one must complete the first six of nine training modules, each of which is followed by a test. Prospective CPSRs have five years to complete the modules. Continuing education is required each year to retain certification.

Applicants must have at least one year of insurance "knowledge", either experiential or educational.

They are currently developing modules for an advanced level of certification.

Most states accept certification for updating state licenses. Florida exempts certified individuals from having to take the state licensure examination.

A series of videotaped training materials have been developed which are used by insurance agencies for continuing education of their CPSRs. Illinois State University administers two educational programs developed by the organization. One is designed for independent insurance agents, the other for individuals interested in opening an independent insurance agency.

Organization: Society of Actuaries
475 N. Martingdale Road, Suite 800 Schaumburg, IL 60173
(708) 706-3527
Contact: Pat Holmberg

System has been operating since 1949 with 1,671 fellows, 7,700 associates and 9,400 members.

The society administers written exam to individuals seeking certification.

Organization has no educational prerequisites.

There are two levels of certification. To become an associate, one must complete 200 credits (155 required and 45 elective). For fellowship, one must complete 250 additional credits. There are also divisions based on specialty.

Many states recognize certification and require that persons must be certified to sign certain pension documents.

INVESTIGATIONS

Organization: Executive Protection Institute (EPI)

Address and Telephone: Arcadia Manor, Route 2 Box 3645, Berryville, Va. 22611 703-955-1128

Contact: Richard W. Kobetz

Context: The Institute is 15 years old and runs several week-long programs each year for a clearly special market niche of personal protection. The Institute is a range of anti-terrorist, personal protection and etiquette lessons. The faculty is multi-national ex-state and defense, CIA, Secret Service, and more.

The certification as a member of the NINE LIVES comes after completion of the week-long training which costs $2,700 per person. There is an active job placement program and more. **Who is eligible:** There do not appear to be any preconditions as to who would be accepted; however, the cost is a natural screening device.

Course of study required/Prerequisites: None except that of the training.

Organization: International Security and Detective Alliance (ISDA)

Address and Telephone: Box 6303 Corpus Christi, TX 78466-6303

Contact: H.Roehm, PhD. Founder and Director

Context: ISDA began in 1984 as a private proprietary organization. Membership is composed of detectives, security, bodyguards, bounty hunters, firearm dealers, police, military and others. The Institute of Investigative Sciences offers the graduate Investigative Specialist vocational degree (GIS). There is a career development program for continuing education services. There is a Professional Certification Program. The certification has increasingly been used by the courts to qualify expert witnesses.

Organization: American Society for Industrial Security

1655 N. Fort Myer Drive, #1200 Arlington, VA 22209 (703) 522-5800

Contact: E.J. Criscuoli, Jr.

System has been operating for 16 years with over 3,000 certified and 5,000 members.

The organization offers a certification program based on education, work experience, and a written examination. Recertification requires nine credits of security activities during a 3-year period.

In 1991, 15 written examinations were administered.

The written examination fee is $200.00 ($100 for retake). The recertification fee is $30.00. Some certification activities are contracted out. The certification body is part of an association, with administrative independence.

MANAGEMENT SERVICES

Organization: National Management Association (NMA)

Address and Telephone: 2210 Arbor Blvd., Dayton, Ohio (513) 294- 0421

Contact: Karen S. Tobias Vice-President/ Professional Development

Context: NMA was founded in 1925 under the guidance of Charles F. Kettering. Chapters are established inside a firm or in a geographic area. The chapters are allowed to determine membership eligibility standards. One of the stated goals is to make management a profession. NMA along with the International Management Council formed the Institute of Certified Professional Managers in 1974.

Who is eligible: High School diploma or equivalent and experience in management positions.

Course of Study/Prerequisites: None per se. There are self study manuals available through ICPM and a list of practitioner/business magazines, academic journals and the Wall Street Journal are all mentioned as being of value. Individuals are encouraged to join several professional organizations.

Levels of Certification: There are two, Associate and Certified Manager. In order to remain certified, there must be at least 50 hours of participation in management eduction during a five year period. Additional recognition is given for 200, 500 and 1000 hours of study and then a certificate in management instruction.

How Financed: $50 fee to register, $35 for each test segment

Who Manages: ICPM has overall responsibility, though proctors administer the test at various sites.

Organization: American Consultants League (ACL)

Address and Telephone: 1290 Palm Ave., Sarasota, FL 34236,
(813) 952-9290

Contact: Hubert Bermont, Executive Director

Context: The ACL is an interdisciplinary national professional organization that sponsors the Consultants Institute, which is a home study program with six courses.

Who is eligible: No preselection criteria.

Course of Study/Prerequisites: Completion of the six courses assures designation as a Certified Professional Consultant (CPC).

How Financed: Total courses are $900.

Organization: Organization Development Institute (ODI)

Address and Telephone: 11234 Walnut Ridge Road, Chesterfield, Ohio 44026 (216)461-4333

Contact: Dr. Donald W. Cole

Context: ODI manages an International Registry of Organizational Development Professionals. ODI provides support on an international basis and is currently heavily involved in eastern European countries.

An individual can be a member of ODI without being qualified to be listed on the registry as a professional consultant. The requirements for participation in the registry as a Registered O.D. Consultant (RODC) include agreement to follow the code of ethics (which is apparently of major importance) and to have no less than a BA degree through a PhD. Work experience is required, and letters of endorsement from qualified OD consultants.

The ODI since 1985 has been developing a new accreditation of program for the field for academic programs, due to the unwillingness of the American Assembly of Collegiate Schools of Business to accredit the program, which it regards as a specialty program.

Organization: Sales and Marketing Executives International

Statler Office Tower, #458 Cleveland, OH 44115 (216) 771-6650

Contact: Marilyn Praznik

System has been operating since 1986 with 219 certified and 10,000 members worldwide; 8,000 in U.S.

Organization gives written exams. They certify sales and marketing managers. Recertify every five years.

Must meet a 35 point system based on work experience, formal and continuing education offered through association.

Use materials developed by Memphis University

Organization: American Association of Airport Executives

4212 King Street Alexandria, VA. 22302 (703) 824-6300

Contact: Maureen Dysart

System has been operating since 1954 with 330 certified and 5,000 estimated members.

Organization has a three part program - two exams, management presentation (research paper or speech), oral board review

Prerequisites - four year college degree, or two years experience for each year of college, and management at public use airport of one year or longer.

Developed a written exam for Professional Development Institute, which is associated with the University of Texas. Have developed a one week course with one chapter and exam may be taken at the end of the course.

Organization: American Chamber of Commerce Executives
4232 King Street Alexandria, VA 22302 (703) 998-0072
Contact: Eric Stowe

To become a certified chamber executive, one must amass eighty percent of an 800 point rating system which includes an application detailing professional leadership and involvement, a six-hour essay and short answer exam, and a panel interview. In addition, a reference check is conducted. A study packet is provided to prepare for the exam. Every five years, one must demonstrate continuing education and professional leadership to maintain the certification.

Organization has no educational prerequisites.

Organization: In-Plant Management Association
1205 W. College Street Liberty, MO 64068 (816) 781-1111
Contact: Shannon Inderle

System has been operating since 1977 with 500 certified and 2,300 members.

The association operated two certification program: certified graphic communication manager and certified mail manager. The graphic communications manager program involves a seven-part written test and the mail manager test involves a six-part written test. The association chapters form study groups to prepare applicants for the tests. The association provides study guides and sells books.

To qualify for the graphic communication test, one must have five years of experience in in-plant management. To qualify for the mail test, one must have five years of experience in in-plant mail management. Both also require three letters of recommendation.

Organization: National Association of Scientific Materials Managers
University of Iowa
4321 BSB Newton Road Iowa City, Iowa 52242-1109 (904) 644-3810
Contact: Marjorie Masterman

System has been operating since 1990 with one certified and 300 members.

To obtain certification as a certified scientific materials manager, one must complete 80 hours (30 hours of basic and 50 hours of specialized courses) of instruction. Credits can be earned at association sponsored seminars, seminars offered by the University of Iowa, other accredited universities, correspondence schools, or company sponsored seminars. In addition, one must complete a paper on a list of at least six topics, which is evaluated by the certification committee. Certification lasts for five years, and once renewed, the individual is certified for life. To renew, one must attend a specified number of association sponsored conferences and seminars.

One must be a member of the organization to apply for certification. There are no specific experiential or educational prerequisites.

The occupation is not subject to state licensing requirements or federal or state regulation.

Organization: National Contract Management Association
1912 Woodford Road Vienna, VA 22181 (703) 448-9321
Contact: Kim Okland

System has been operating since 1974 with 4,667 certified and 21,568 members.

The association operates two certification programs, certified associate contract manager (CACM) and certified professional contract manager (CPCM), both of which are awarded based on the result of a written exam. The CACM exam is by multiple choice. The CPCM exam is an essay exam. Each chapter of the association forms study groups to help prepare applicants for the test.

To apply for certification, one must possess a bachelor's degree and about two years of contracting experience. In addition, specific college level courses must have been taken to qualify for each program. The CPCM is the more advanced certification.

Although materials are not developed for use by other educational institutions, college professors have used existing association materials.

Organization: Institute of Management Consultants
521 5th Avenue, Floor 35 New York, N.Y. 10175 (212) 697-9693
Contact: Wendy Dietrich Benz

System has been operating for 25 years with 1,780 certified and 2,200 members.

To become a certified management consultant, one must pass a written test and submit five case studies of the type of work one does. In addition, applicants are subject to an oral interview and verification of their education and work experience.

To apply for the certification, one must have five years experience in management consulting and a four year degree or the work equivalent. In addition, applicants must submit six professional references.

Organization: Institute of Certified Professional Managers
James Madison University Harrisonburg, VA 22807 (703) 568-3427
Contact: Melody Branner

Programs been operating since 1974 with 5,000 certified and 5,000 members.

To become a certified professional manager, one must pass a three-part written examination, which is administered twice per year. The Institute provides study manuals, but no classes. One must be recertified after five years.

To determine eligibility, the Institute evaluates the education and work experience of applicants, using a ten-point rating system. Some management experience is required.

There are currently two levels. Individuals who do not meet either the educational or work experience requirements for the certification are permitted to take the test, and upon passing are issued an associate certification.

Organization: Project Management Institute
P.O. Box 43 Drexel Hill, PA 19026 (215) 622-1796
Contact: Barbara Pattinson

Programs been operating since 1984 with 1,273 certified and 8,000 members.

To become a certified professional project manager, one must pass a written test and have one's application approved. The institute conducts a class once per year. Workshops are conducted by local chapters. A class is also taught at George Washington University. One must be recertified after seven years.

Applications are evaluated based upon a 95 point system that assesses one's education, work experience, and professional project management organization.

Organization: Expediting Management Association
7130 E. Gary Rd. Scottsdale, AZ 85254 (602) 998-0009
Contact: Herbert J. Green

Programs been operating for 22 years with 250-300 certified and 300-350 members.

To become a certified expediting manager, one must complete a specified number of lecture hours and pass a four-hour written test. The association conducts seminars and lectures throughout the year at various locations. Certification must be renewed after ten years.

To qualify one must be a practitioner. Generally three years of experience is required, and the completion of the required number of lecture hours.

Organization: Administrative Management Society
1101 14th Street, N.W.,#1100 Washington, D.C. 20005 (202) 371-2200
Contact: Carla Freudenberg

Programs been operating since the 1970's with 1,000 certified.

To become a certified administrative manager, one must pass a series of five multiple choice tests and complete a case study. To take the test, one must submit an application detailing experience, professional activities and contributions to the field, as well as letters of recommendation. The society provides a study guide.

A certain number of years of experience in a supervisory capacity is required.

Organization: Treasury Management Association
7315 Wisconsin Avenue, Suite 1250 West Bethesda, MD 20814
Contact: Jacqueline Callahan

The organization offers a certification program based on education, work experience, and a written examination. Recertification requires 72 renewal credits during a 6-year period.

In 1991, one written examination was administered.

The minimum total fee to obtain certification is $325.00 ($275 for assn. member). The recertification fee is $60.00 ($25 for assn. member).

Some certification activities are contracted out. The certification body is part of an association, with some administrative independence.

MANUFACTURING

Organization: National Screw Machine Products Association (NSMPA)

Address and Telephone: 67000 W Snowville Rd., Brecksville, OH 44141-3292 (216) 526-0300

Contact: Scott D. Giesler, Director of Marketing and Training

Context: NSMPA was founded in 1933 and now represents 530 companies and more than 65% of the total annual screw machine products produced in North America. Most of the firms are small family-owned businesses ranging in size from 3-person shops to 200 or more employees. Given the size and types of the firms, a major focus on the service of the association relates to technical support, such as accounting manuals, cost-control systems and hazardous waste compliance guides. Another focus is organization of information such as wage and hour information, data measuring productivity, and a job classification system manual that provides job descriptions, point ratings and correlation values for more than 90 individual job categories.

NSMPA is a sponsor of a BAT recognized apprenticeship program for machinist for automatic screw-machines. The agreement dates back to 1980. The program is four years in duration and is managed by individual companies. Some have been conducted under the auspices of a consortium of companies. The total recommended hours are 6,080, beginning with tool crib familiarization; working drill presses; milling machines; lathes and hand screw-machines; bench work; operation, adjustment and tool changing; and tool setting set up and machine maintenance.

However, as will be discussed under the History section, there are a wide range of programs which do not fall under the rubric of the formal apprenticeship programs that are promoted and sponsored by the association.

Who is eligible: Technically, not even a high school diploma, but the curriculum and knowledge required includes knowledge of chemistry, physics, and substantial sophisticated ma

History: In an undated publication, TRAINING PROGRAMS CASE STUDIES, the association provides a wide range of examples regarding the training of workers that includes an analysis of the success and problems of particular programs. Most of the examples are drawn from programs developed in the late 1960's and the early 1970's. A cursory review of the examples suggests that efforts to attract and keep younger, sometimes at-risk, population into the industry were at best marginally effective. Also the materials show a substantial amount of experimentation in terms of where the training occurs (on-site, at night, at educational institutions, etc.) as well as time required for the training (ranging from a six month course to an 8,000 hours apprenticeship program).

NSMPA currently offers a range of on-the-job basic training programs for operator training that are sponsored, in part, by a range of machine producers (vendors). Audiovisual materials are available, as well as instructor's and trainee's manuals and tests.

Apparently, the search continues for the right mix of educational and training requirements because several Michigan NSMPA members currently are working on an outline of a program to recognize those who continue to advance throughout their metalworking careers. This plan would establish a Master of Craft certification. It would be based on a range of experience and education gradations. If an individual has completed a certified apprenticeship program and 10 years of documented experience, or without apprenticeship training, 14 years of experience, the Master Craftperson could be so designated with additional education through a relevant AA degree or continuing education programs equivalent to an AA degree, and by teaching or supervising in a certified apprenticeship program and, finally, an evaluation by the employer and the joint apprenticeship committee.

PRINTING

Organization: Graphic Arts Technical Foundation (GATF)

Address and Telephone: 4615 Forbes Ave., Pittsburgh, Pennsylvania 15213

Contact: Jack Simich, Business Manager Education and Training Development

Context: GATF is a member supported non-profit scientific, technical and educational organization. Over 300 representatives from companies worldwide serve on the board and committees. Educators and students are also part of the 6500 members. It began in 1924 and its fundamental purpose is scientific progress for the graphic communications industry. Publishing of textbooks, quality control devises, and other training and production aides are natural companion products of the research focus. For the past 25 years, the foundation has focused increasing attention on education and training issues.

The certification program is designed to provide industry specific certification in graphic communications technologies. It is designed for a variety of learning environments -- the classroom or the production facility. It covers about 20% of the production jobs in three categories: film assembly, sheetfed offset and web offset press.

Who is eligible: There is a two track option: completion of an academic training program from a vocational tech school or an AA or certificate program in a post-secondary institution. The industry track can be after a completion of a training program or five years of experience.

Course of study required/Prerequisite: The individual must be working in order to receive the certificate(s), due to the requirement of a 6 and 12 month supervisory review prior to issuance of technical certificate. There is no requirement that the supervisor be certified. Must be able to pass a written examination plus performance tests. Performance tests are not required for web press or sheetfed press if the individual has five years of experience based on the recognition of the inordinate cost in lost production time and the expense; however, those taking the education track are required to take the performance test. A performance test is required for film assembly for both tracks of candidates.

There is no absolute course of study required however, GATF does provide a complete training program or subject curriculum including a supervisor's manual, self-paced learning modules, and textbooks that can be used by schools or an industry training program. Certification through schooling is only available if the school has used the GATF materials.

These job categories and certificates are ones that can be geared towards high school students.

Levels of Certification: The certification is by type of production. Film Assembly, Sheetfed Offset Press, and Web Offset Press. A certificate is given for each phase in the process i.e. completion of exam or performance test. Cannot register for the supervisory reviews until completion of exam and test.

Who Manages: The Foundation in close concert with supervisors and schools.

How Financed: The fee structure totals $225, but it is broken into sections: $25 for registration, $50 for each test, $50 for jury review of performance tests, $25 for six and 12 month supervisory review, as well as for the certificate itself.

Occupational Analysis: The training modules and test are based on a task analysis of current production operations, which are in effect job descriptions, ranging from core competencies for the particular production technique to specialized operating knowledge. Both knowledge areas and operations tasks are included.

Partners: GATF is acting as the administrative agent for the U.S. Dept of Ed. skills standard grant. One of the key tasks of the grant is to address the fragmentation in the industry, which has over 50 different trade associations.

Organization: Printing Industries of America, Inc.(PIA)

Address and Telephone: 100 Dangerfield Road, Alexandria, Va 22314, (703) 519-8100

Contact: Diane E.Swanson, Manager, Educational Services, Member

Context: Between 1982 and 1990, the industry created approximately 145,500 new jobs. The industry has seven major sectors -- commercial, business forms, engraving and platemaking, and blankbooks and binders. There are 40,000 firms collectively employing 808,600 people, making it the second largest manufacturing employer in the U.S. There are six major job clusters across the industry (pre-press, press-lithographic processes, press non-lithographic processes, bindery, and printing services). Growth in the printing industry continues to outpace GNP growth. PIA has 13,500 firms as members.

Purpose: The PrintED certification program is geared primarily towards the certification of the education program offered by an educational institution that covers the basics of the industry for entry level workers. This includes introduction of the industry, reproduction photography, image assembly/platemaking, basic press operations, advanced press operations, electronic imaging, advanced electronic prepress, and finishing bindery.

Who is eligible: Educational institutions

Course of Study/Prerequisites: Geared towards secondary printing education programs. The instruction is based on 412 tasks divided into six certification areas. Each of the six areas must stand on their own. Any program that is certified must cover at least two areas.

Levels of certification: There are no certificates for the students per se. The program provides instructors with rating scales for each of the areas, by tasks. Students may not be rated in any of the specialty areas without having been issued an introduction certificate.

How Financed: Information not supplied.

Who Manages: PIA, but school can apply directly to local affiliate.

History: PIA has been one of the more active national associations in the development of industry/education partnerships. Under the auspices of the National Council on Vocational Education a study was conducted regarding the vocational technical education needs of the industry of which PIA was an active member. As a result of that study PIA's PrintEd program was endorsed as a model program.

They are also one of the major partners in the U.S.D of Ed skill standards development grants. PrintED was developed in Georgia in 1988 and the state has developed a curriculum to accompany the program. It was adopted by PIA in 1990 and the national organization is now responsible for managing the certification process which has three phases; an initial application, a self-evaluation and an on-site review. There are nine areas of standards that cover content as well as administrative, facility and instructional staff issues.

MARINE

Organization: The Seafarers International Union's (SIU) Harry Lundeberg School of Seamanship (SHLSS)

Address and Telephone: PO Box 75, Route 249, Piney Point, MD 20674, (301) 994-0010

Contact Ken Conklin, Vice President

Context: The SHLSS was established in 1953 and is the largest training facility for deep sea merchant seafarers and inland waterways boatmen in the U.S. The board of the school is composed of Seafarers Union representatives and management of American flag deep water ships and inland tugs and towboats. Training is provided for the entry level worker through upgrading and AA degrees.

Who is eligible: For initial entry, one must be a U.S. citizen, between 18-24 years of age, with an 8th grade education and meet federal government criteria for issuance of Merchant Mariners Document. One must pass a drug test and obtain application through one of the SIU's port agents. Eligibility for the upgrading and specialty programs varies.

Course of Study/Prerequisites: Each student, regardless of the program being pursued, must attend classes seven hours each day, five days a week. The entry program lasts eight weeks for stewards and 12 weeks for deck and engine. It is required for all students joining the SIU. There are no tuition, book, or room and board charges.

Time spent in service, plus (in several cases) proof of meeting U.S. Coast Guard Standards, is required for upgrading and specialty tracks, of which there are several: engineering, navigation, electronics, hydraulics, welding, and others.

The school also offers adult basic education courses and support to pass the GED.

Levels of Certification: There are several different levels per specialty. Most are based on passage of U.S.

Coast Guard exams that are administered by the Guard at the end of many of the courses. **Standards setting**: In essence, the U.S.Coast Guard establishes the standards for most of the occupations through its licensure and/or examination requirements.

Partners: In 1978 entered in a contractual agreement with Charles County Community College of Maryland in order for students to take college levels courses offered on the campus of SHLSS. Since 1985, SHLSS has had its own degree programs in Nautical Science Technology and Marine Engineering Technology. The school has also worked with the U.S. Navy for training of crews for Military Sealift Command contracted ships. The ACE's PONSI program also certifies several of the courses for college credit. The College Level Examination Program (CLEP) of ETS also works with the school.

SAFETY

Organization: Board of Certified Safety Professionals (BCSP)

Address and Telephone: 208 Burwash Ave., Savoy, IL 61874-9510 (217) 359-9263

Context: The Board's purpose is to establish minimum academic and experience attainments necessary to qualify as a Certified Safety Professional; assess and certify applicants; and maintain standards for maintenance of certification.

Who is eligible: Only individuals that have a BA and four or more years of experience acceptable to the board.

Course of study/Prerequisites required: BA degree required and Board evaluates credit that is allowed to vary from 12 units of unrelated degrees to 48 hours in an accredited program. Experience may be substituted at the rate of one month of experience for each unit of credit to reach the maximum of 48. This experience cannot be applied towards the general criteria discussed above. There are other substitution details

Levels of Certification: There are two levels of exams that all must pass: the Safety Fundamentals and an examination in one of the following areas: Engineering, Management, System Safety, Product Safety, and Comprehensive Practice.

The certification is good for eight years. Recertification is contingent upon credits for professional development during five year intervals.

Who manages: The Board

How financed: Annual fees that currently include an application fee of $80 and examination fee of $125 for the fundamental exam and $150 for specialty and $50 for section retakes.

History: In the late 1940's and early 50's, there was an influx of talent into the field of safety which represented a blend of engineering and physical sciences. They entered a field where many of the practitioners were not professionally trained.

The effort began in 1969 as a result of a special committee of the American Society of Safety Engineers. There are now three sponsoring organizations: the American Industrial Hygiene Association, the American Society of Safety Engineers, and the Systems Safety Society. The first task was to reach some agreement regarding what constitutes professional work. It took three years of writing and re-writing to develop that definition. Nine type-written pages were used to describe the work (this has been updated in 1982, but the essentials are still the same).

The second phase was a fact-finding project that included sending letters to over 1000 colleges and universities to ascertain what the current course work was, and if there was interest in development of the "new professional curriculum." Also 500 firms were surveyed that were known to hire safety engineers. It focused on current and future projections and salary ranges.

Another part of the second phase was the development of the curriculum guide for the B.S. level and was the first work that defined the body of knowledge. Only after this work was completed did ASSE begin to develop a means to register and certify applicants.

Approximately 3,500 individuals were "grandfathered" in when academic requirements were established with a substitute of two years of work experience for every one year of academic work.

It was not until 1972 that a single-level exam was developed. It was the only one available for six years and, during that time, 2500 individuals were certified through that process. This single-level exam became the basis for the core exam in 1978 (with modifications). By 1978 three specialty exams were developed (see above).

Partners: The Academic Accreditation Council of the American Society of Safety Engineers is one of the partners with BCSP. It has set curricula standards for schools seeking accreditation; however, it was not until 1991 that the two boards issued a joint publication defining general criteria for what a baccalaureate degree should contain. The studies are to be inter-disciplinary, including elements of engineering, physical sciences, social sciences, life sciences, education, management and other fields. Prior to this time, it was possible for a program to be accredited but to not have met the BCSP standards. The result was that students in some accredited programs were not able to sit for the Safety Fundamentals Exam while in school.

Organization: American Traffic Safety Services Association
ATSSA Bldg. 5440 Jefferson Davis Hwy. Fredericksburg, VA. 22401
(703) 898-5400
Contact: Christine Tunbridge

System has been operating since 1976 with 4,000 certified and 700 members.

Organization gives a written exam. Must recertify every four years

One year work experience plus references are required.

Two levels - Worksite Technician, Worksite Supervisor

Organization: Motorcycle Safety Foundation
2 Jenner Street, Suite 150 Irvine, CA 92718 (714) 727-3227
Contact: Elizabeth Weaver

System has been in operation since 1973 with over 20,000 certified and 6,000 members.

Organization offers instructor certification. Written exam plus driving performance exam. Must be recertified every three years.

Must be an experienced motorcyclist.

Two levels - Instructor and Chief instructor

Developed curricula for new riders, experienced riders, instructor and chief instructor training. Used by community colleges, technical colleges, and universities.

Organization: Automatic Fire Alarm Association
P.O. Box 1652 Barrington, IL 60011 (708) 381-6422
Contact: Larry Neibauer

System has been in operation since 1988 with 840 certified and 700 members.

Written exam given by the National Institute for Certification in Engineering Technology (NICET). This organization does training to prepare for exam.

Requires work experience in specific areas

Three levels - two year, five year, ten years

Some states require certification to operate; starting to show up in federal job bidding specifications.

Organization: National Fire Sprinkler Association
Robin Hill Corporate Park Route 22, Box 1000 Patterson, NY 12563
(914) 878-4200
Contact: John A. Viniello

System has been operating since 1948 with 20,000 apprentices, 2,000 technicians and 400 companies in the organization.

Organization helped to set up an apprenticeship training program for sprinkler fitters. It is a four year on-the-job training program established in 1948. This program has a correspondence course run by Penn State. They also helped to set up a certification program for sprinkler technicians. This program has been in operation since 1980.

The sprinkler technician program is based on at least a high school diploma. The required time spent in the workforce depends on the level at which they are being certified. The levels and the required work experience are as follows: Entry level - ? Associate - two years
Certified - 5 years, Senior - 10 years

Wisconsin has their own fire alarm designer licensing law. In a few other states, there are sprinkler licensing laws requiring that at least one certified sprinkler technician should be present during a job.

Organization: Chimney Safety Institute of America
18115 Georgia Avenue P.O. Box 429 Olney, MD 20830 (301) 774-5600
Contact: John E. Bittner

System has been operating since 1982 with 3,118 certified and 800 members.

To obtain certification, one must pass a written exam based on a study manual and a book published by the National Fire Protection Association. Individuals must be recertified every three years. The institute is currently considering adding a performance test.

Organization has no educational prerequisites.

Some states require licensing, and a few are considering requiring certification.

The institute recently published a book which is used by engineers, home inspectors and insurance companies.

Organization: Board of Certified Hazard Control Management
11900 Parklawn Drive, Suite 450 Rockville, MD 20852 301-984-8969
Contact: Robert Teitler

System has been operating since 1983 with an estimated 5,000 certified and 5,000 members.

Certification programs in four areas for hazardous materials managers: Health and safety, Product safety, Hazardous control, and Hazardous materials.

Certified by examinations through universities nationally. Recertification is every three years.

Applicants for certification must meet minimum experience requirements and have an approved BS or BA.

There are various levels of certification based on experience and education (three or four in each area).

Organization: National Coordinating Council on Emergency Management
7297 Lee Highway, Unit N Falls Church, VA 22042
Contact: Elizabeth Armstrong

The organization offers a certification program based on education, work experience, and a written examination. Recertification is after a 5-year period, with the first recertification exam-based, and subsequent recertifications based on continuing education and professional development.
This program is starting in 1993.

The minimum fee to obtain certification is $300.00. The written examination fee is $100.00. The recertification fee is $100.00.

The certifications operations are conducted in-house. The certification body is part of an association, with administrative independence.

SERVICE INDUSTRIES

Organization: National Council for Interior Design Qualification (NCIDQ)

Address and Telephone: 118 East 25th St. New York, NY (212) 473-1188

Contact: Edward U. Gips, Certificates Coordinator

Content: The Council has been in effect since 1972. The parent organization, the American Institute of Interior Designers (AID) felt that a separate organization was needed to conduct the certification. There are no individual members of the Council, which is made up of professional design organizations and licensing boards only. The Council acts as a clearing house for state licensing boards, including licensing reciprocity. Over 8,000 candidates have successfully completed the exam. Approximately 75% of all candidates eventually pass. The letters cannot be used as an appellation after a name.

Who is eligible: Education in interior design or allied field. If candidate has a two year certificate, four years of experience are required, up to a four or five year degree which requires only two years of experience.

Course of study/prerequisites: No absolute requirements, but apparently no one has been able to pass without some study. The Council itself does not provide or endorse any workshops. Some of the member organizations do so.

Levels of Certification: Only one. At the present time, there is no requirement for recertification, though it is encouraged. NCIDQ is investigating the possibility of requiring some form of recertification.

How financed: Fees that range from $50 to 150 for different portions of the exam plus fees for examination guides and other material.

Partners: The exam must be passed by every interior designer applying for professional membership in the Council's constituent member organizations (six in all). It also must be passed in those states that have licensing or registration statutes governing the profession.

Assessment: In 1990, after two years of extensive research and development, modified its two-part format to a six-part examination which is in part a result of a job analysis of interior design. The revisions represent a shift from standardized testing to performance testing which places a greater emphasis on practical experience. However, there was no shift from the common body of knowledge being tested. The new format has three levels of assessment: recall, application and development. There are six parts to the examination and the candidate must pass all of them within a five year time frame.

The exam is developed by NCIDQ and is updated approximately every five years. In 1987, ETS conducted an analysis of the profession and reviewed and updated the question bank. There is a pre-test by practicing interior designers who have passed the examination. Regional jury centers are being established where NCIDQ volunteers assist in the judging of the exams. The exam was selected by the National Society for Performance and Instruction (NSPI) as a finalist for the Outstanding New Systematic Application Award for 1991.

Organization: International Association of Lighting Management Companies
34-C Washington Street Building 5 Princeton Junction, NJ 08550
(609) 799-5501
Contact: Christin Lascelle

System has been operating since 1989 with 82 certified and 250 members.

The association operate a skills certification program for lighting management consultants. To obtain certification, one must pass a test which includes multiple choice and fill-in sections. Once certified, one is subject to recertification every three years.

To apply, one must have at least three years experience in the lighting industry.

The occupation is subject to state licensure requirements in many states; however, the certification has no bearing on licensure.

Organization: National Executive Housekeepers Assoc. (NEHA)
Address and Telephone: 1001 Eastwind Dr. Suite 301 Westerville, Ohio 43081-3361 (6140 895-7166
Contact: Tedya Cooper, Deputy Director

Context: The organization was founded in 1930. Today there are more than 7000 members world wide. There are 145 local chapters. In the DOT Code, executive housekeepers are listed within the lodging occupations, as well as service industry managers who work in hospitals, as institutional food services directors, as convention managers, and others. The estimates are that this segment of the service industry will increase by 25% by the end of this decade (3.2 million workers). For those who work in hotels and motels, salary can range from $15,000 to $32,000. For those in health care institutions, salary may exceed $40,000 a year. The NEHA currently supports two certified programs: Certified Executive Housekeeper (CEH) and Registered Executive Housekeeper (REH.)

Who is eligible: CEH represents the initial entry. An individual must complete a required course of study. For an REH, time at the supervisory level is required.

Course of study/Prerequisites: There is a required course of study that is 330 subject hours long, spelled out in great detail. The courses can be taken in a certificate program, at a community or four year college (NEHA has an approved list of schools) or through a self-study program that consists of a productive manager series and a technical and administrative one ranging from microbiology, waste control and basic accounting to housekeeping techniques. There is an emphasis on continual education.

How Financed: Fee for the self study would total almost $3,000

Who Manages: NEHA

Organization: National Association of Institutional Linen Management
2130 Lexington Road, #H Richmond, KY 40475 (606) 624-0177
Contact: Connie Parker

System has been operating since 1977 with 427 registered, 144 certified and an estimated 1,800 -

2,000 members.

Registration program - on-campus program at the American Laundry and Linen College. Held three times a year. There are three separate parts. To enroll in the third part, parts one and two must be completed. Prerequisite of H.S. diploma or GED to get into program. Graduate as a registered laundry and linen director. To maintain, have to have 45 contact hours over two year period.

Certification program - correspondence course that certifies CLLM (laundry and linen manager). eight section course with (open book) quiz at end of each section. Must pass 70% of quiz to take final exam (450 questions). Have to pass each section in final exam with 70%. If a section is failed, it can be retaken only to pass the final. 45 contact hours required over three year period.

Organization: Cleaning Management Institute
13 Century Hill Drive Latham,NY 12110 (518) 8783-1281
Contact: Susan Mayer, Executive Director

System has been operating for three years with 127 certified and 1,700 members.

The institute operates two certificate programs, the Supervisor Home Study Course and the Custodial Technician Training Program. The supervisor program involves a series of three written exams and a final exam. The custodial technician program involves one test. Both programs are home study courses and the completed exams are mailed to the institute for scoring.

Organization has no educational prerequisites.

There are two levels of the custodial technician program. The higher level program covers advanced techniques for more difficult cleaning jobs.

The institute does not currently develop materials for other educational institutions, but plans to in the future.

Organization: Mail Systems Management Association
P.O. Box 2155 GPO New York, N.Y 10116 (908) 775-7524
Contact: Lance Humphries, President

Programs been operating for five years with 56 certified and 1,300 members.

To become a certified mail and distribution systems manager, one must pass a 3 - 4 hour written exam covering six areas: US Postal Service, finance and budgeting, system design, human relations, technology and automation, and alternative services. The exams are usually offered during the association's national conference. Preparation materials and relevant books are available at local chapters and a refresher course is offered the day of the test.

To take the exam, one must submit an application detailing one's work experience, education, knowledge, professional activities, and published articles. The application is rated by the association's certification review board and must receive 100 points to qualify. In addition, one must submit a letter from an employer and sign a code of ethics.

Organization: Association of Specialists in Cleaning and Restoration.
10830 Annapolis Junction Rd.,#312 Annapolis Junction, MD 20701
(301) 604-4411
Contact: Claudia Ramirez

Programs been operating since 1984 with 500 certified technicians, 135 certified restorers and 700 members.

The association manages two certification programs through its National Institute for Fire Safety: certified restoration technician and certified restorer. To become a certified restoration technician, one must take a two-day course and pass a written exam. To become a certified restorer, one must take a five-day course, pass a three-hour exam on the sixth day, submit a formal report or thesis on a specific restoration topic, and participate in an oral ethics interview.

There are no prerequisites for the technician certification; however, to qualify to participate in the restorer program, one must have two years restoration experience, submit three estimates of previous restoration work and have participated in the technician course or two institute seminars.

The technician is the lower level certification. The certified restorer is the more rigorous program for experienced restoration professionals.

Some states require that restorers be licensed contractors or licensed remodeling contractors. The certification has no bearing on the licensing requirements.

Association staff sit on the boards of other certification bodies and contribute to the development of their educational programs.

Organization: Professional Secretaries International (PSI)

Address and Telephone: 10502 NW Ambassador Dr. PO Box 20404, Kansas City, MO 64195-0404 (816) 891-6600

Contact: Susan Fenner, PhD, Manager, Education and Professional Development

Context: The organization was developed in 1942. The membership has individuals that are executive assistants, information specialists, office managers, and secretaries. PSI sponsors the Institute for Certifying Secretaries. The entry level program is the Office Proficiency Assessment and Certification; the advanced is the Certified Professional Secretary Rating. In 1992 there were 37,812 holders of the CPS rating.

Who is eligible: Full time employed secretaries, college/university students, and business educators.

Course of Study/Prerequisites: No absolute course of study, though there is an outline. If there is no degree, four years of experience are required; if an AA degree is held, three years; a BA, two years.

Levels of Certification: PSI will continue to administer the CPS and the recertification program. However, the entry level certification exam was designed to be administered by corporations and educational institutions. Recertification requirements have been in force since 1987, of which there were 29 so classified in 1992.

How Financed: Fees to take the full exam are $100, for recertification $75.

Partners: PSI has long been involved in educational programs, including developing a recommended curriculum for high school business education. In a 1987 study, PSI conducted a research study to identify and verify competencies for entry-level support staff. Forty-nine competencies were identified by managers, business educators, and experienced professionals. Additional verification came from diaries kept by entry-level workers. The draft curriculum was then reviewed by a post-secondary committee and then redrafted to realign the proposed required course work at the high school level, with postsecondary office curriculum for office careers currently being updated in a process that is taking over a year.

ACE recommends to universities that 32 semester hours of academic credit be awarded for those who have the CPS rating. PSI maintains a list of those colleges and universities that do so.

Assessment: In 1990 PSI contracted with ACT to conduct a job analysis and contents validity study. As a result, the exam will be lengthened to a full-day, 3-part test, available in 1994. More emphasis will be placed on Office Administration and Communication and less on business law and accounting. Paper and pencil as well as testing on equipment is standard.

Organization: National Association of Personnel Services
3133 Mt. Vernon Avenue Alexandria, VA 22305 (703) 684-0180
Contact: Scott Kennaugh

Programs been operating since 1961 with 8,000 certified and 1,000 member companies and 100 individual members.

The association operates two skills certification programs, certified personnel consultant and certified temporary staffing specialist. A two-part test is administered based on study material sold to the applicant.

To apply for the personnel consultant certification, one must have one year of experience in personnel. To apply for the temporary staffing specialist certification, one must have six months of experience in personnel.

Organization: Human Resource Certification Institute
(affiliated with the Society for Human Resource Management)
606 N. Washington Street Alexandria, VA 22314 (703) 548-3440
Contact: Kim Eastman
Programs been operating since 1977 with 12,000 certified and 55,000 members.

The institute offers two certifications: professional human resource (PHR) and senior professional human resource (SPHR). To obtain certification, one must pass the respective 250 question multiple choice test, each of which is given twice per year. Instructional seminars are offered each spring and fall in five cities. One must be recertified every three years. After one's second certification as a SPHR, one is certified for life.

To become a PHR, one must have four years of human resource experience in an exempt position. To become a SPHR, one must have eight years of human resource experience in an exempt position.

Organization: Professional Secretaries International
10502 NW Ambassador Drive P.O. Box 20404 Kansas City, MO 64195
(816) 891-6600
Contact: Vicky Twombly

Programs been operating since 1951 with 39,252 certified and 40,000 members.

To become a certified professional secretary (CPS), one must pass a six-part two-day multiple choice exam and submit letters from employers verifying secretarial experience. The organization provides a variety of study aids, including a review manual and videotapes.

To qualify, one must have four years of secretarial experience, at least one of which must have been within the last five years. The experience requirement is reduced if the applicant has either an associates or bachelors degree. The organization publishes a magazine.

Organization: National Association of Legal Secretaries
2250 E. 73rd Street, Suite 550 Tulsa, OK 74136 (918) 495-3540
Contact: Greta Kotas

Programs been operating since 1960 with 3,288 certified as CPLS, 45 ALS and 16,000 members.

To become a certified professional legal secretary (CPLS), one must pass a two-day, seven-part written exam. To become an accredited legal secretary (ALS), one must pass a one-day six-hour test. The association's individual chapters provide study groups and the association provides a study guide.

To apply to become a CPLS, one must have three years of experience working with a judge or an attorney. To apply to become an ALS one must have one year of general secretarial experience and completed an accredited legal secretary course.

There are two different levels of certification as described above: CPLS and ALS.

The association has developed a training program for firms, and its study guide is used by schools.

VETERINARY and RELATED SERVICES

Organization: American Boarding Kennels Association
Address and Telephone: 4575 Galley Road, Suite 400-A, Colorado Springs, Colorado 80915 719-591-1113
Contact:

Context: Material sent was the Evaluators guide for Facilities Accreditation Program so it is not directly relevant to the study. However, within the material it is clear that some states require occupational licensure for those participating in the business. In order for the facility to be certified, there must be written job descriptions for all staff and a planned program for training all workers in the facility; however, there is no indication the staff must be certified.

Organization: American Animal Hospital Assoc.

Address and Telephone: 12575 W. Bayaud Ave., Lakewood, Colorado, Mailing address PO Box 150899, Denver, Colorado, 80215-0899
(303) 986-1700
Contact John W. Albers, DVM Executive Director

Context: Association is composed of small animal practice veterinarians who are also small business persons.

They do not have a certification program as of yet. However, the membership is moving towards the development of a certification program for veterinary technicians, veterinary technical assistants, and practice managers. For the technicians, they have produced training materials in various formats, routinely conduct contenting education and have self-assessment examinations.

A committee is in the early stages of considering more formal training programs, including some level of certification.

Organization: American Farrier's Association (AFA)

Address and Telephone: 45059 Iron Works Pike, Lexington KY 40511 (606) 233-7411
Contact: Kelly Werner, Office Manager

Context: AFA was started in 1971. It provides education, research and the farriers certification program.

Who is eligible: Passage of exams.

Course of Study/Prerequisites: AFA provides a study guide which advises candidate that a substantial amount of medical terminology is required.

Levels of Certification: There are three levels; intern, certified farrier (1 year experience), and journeyman certified farrier (2 years experience). Increasingly complex test must be passed at each level.

Assessment: In addition to written exams, there is a performance assessment (horseshoeing), which is conducted under the supervision of AFA approved examiners and testers.

How financed: $10 fee per test. Sponsoring organization may charge more.

Who manages: Local chapters of AFA, over 40 in number using the materials and rules of AFA.

Partners: Working relations are maintained with the American Association of Equine Practitioners, the American Horse Council, the World Farrier's Association and others.

Organization: Animal Technician Certification Program

American Association for Laboratory Animal Science

70 Timber Creek, #5 Cordova, TN. 38018 (901) 754-8620

Contact: Nancy Addcox

System has been operating since 1961 with 1,895 certified last year and 7,000 in membership.

Education minimums and time spent in workforce requirements.

Laboratory Animal Assistant
- —6 months in laboratory animal facility
- —1 yr. animal related experience
- —8th grade education

Laboratory Animal Technician
- —1 yr. in lab animal facility
- —3 yrs. overall of animal related experience
- —H.S. degree or GED

Laboratory Animal Technologist
- —2 yrs. laboratory animal facility
- —6 yrs. animal related work experience overall
- —H.S. diploma or GED

Animal facilities regulated by USDA. This relates to the care of the animals. Regulations require individuals handling animals to be trained.

Organization has student manuals for individuals preparing for certification. In addition, there is also an instructional guide for assistant and technician levels. Materials are used by chapters/branches offering training and all are incorporated into the curriculum of colleges and trade schools that prepare students

RECREATION RELATED SERVICES

Organization: Club Managers Association of America

1733 King Street Alexandria, VA. 22314 (703) 739-9500

Contact: Dr. Otto Kolar

System has been operating for over 25 years with 1,000 certified and 5,000 members.

Organization gives written exam for certified club managers

Offers three different tracks based on different combinations of education and experience.

Developed by association in collaboration with university faculty.

Organization: American Camping Association

500 State Road, 67 N Martinsville, IN 46151 (317) 342-8456

Contact: James Cox

System has been operating since 1970 and have 400 certified and 5,000 members.

Organization gives written exam or evaluation of experience. Certifies five different classifications: 1) day camp director; 2) residential camp director; 3) camp counselor director; 4) program supervisor; and 5) site manager.

Degree or equivalent experience required. Also considered are professional involvement, endorsements. Requires a statement of ethical practices.

Organization: Golf Course Superintendents Association of America
1421 Research Park Drive Lawrence, Kansas 66049-3859
(913) 841-2240
Contact: Penny Hoffman

System has been operating since 1971 with 1,711 certified and 12,000 members.

Six hour written exam plus peer on-site review of golf course.

Combination five years experience as a golf course supervisor plus 30 college credits or completion of seminars offered by association.

Organization: American Swimming Coaches Association
304 SE 20th Street Ft. Lauderdale, Florida 33316 (305) 462-6267
Contact: Jennifer Fisher

System has been operating since 1985 with 3,000 certified and 4,000 members.

Organization gives written exams to certify swimming coaches

They look at a combination of work experience, education, and achievement in the sport. Specific prerequisites for each level. No degree requirement.

Organization has five different levels in their certification program - each level represents increasing experience and achievement.

They also develop home study courses. Certified members use materials in their schools.

Organization: National Association of RV Parks and Campgrounds (formerly the National Campground Owners Association)
11307 Sunset Hills Road, Suite B7 Reston, VA 22090 (703) 471-0143
Contact: Micki Leak

System has been operating for 10 years with 3,000 campgrounds represented.

Will open a national school for the outdoor hospitality industry in 1994 to certify park owners, managers, operators, and employees.

Organization requires one year experience in the industry. No educational prerequisites to take classes.

Five levels beyond initial certification.

Organization: National Swimming Pool Foundation

10803 Gulfdale, Suite 300 San Antonio, TX 78216 (512) 525-1227

Contact: Evelyn Robinson

System has been operating since 1982 with 28,000 certified.

Organization offers written exam to anyone who wants to be a spa or pool operator.

6 to eight states mandate certification.

MISCELLANEOUS SERVICES

Organization: American Planning Association

Contact: Doris Blatt

System has been operating since 1977 with 1,000 certified and 27,000 members.

Written exam used to certify planners

Certification varies depending upon education level and/or experience.

Two states (New Jersey and Michigan) have their own certification test. Other tests use association exam.

Organization: Professional Photographers of America

1090 Executive Way
Des Plaines, IL 60018
708-299-8161

Contact: Carolyn Wojak

System has been operating since 1978 with an estimated 1,650 certified and 1,650 members.

Organization manages a certification program based on a written exam and board review of a product portfolio. The certification is good for five years.

Applicants for certification must have two years experience or one year and demonstrate 60 college hours.

Many specialty areas for certification.

Curriculum and other material is developed by local affiliated organizations and educational institutions.

Organization: National Association of College Stores

500 E. Lorain St. Oberlin, OH 44074 (216) 775-7777

Contact: Marcy Becker

System has been operating since 1986 with 166 certified, 4,000 bookstores and 1,000 Association vendors.

Organization gives a four hour written exam. Certify store professionals. Must be recertified every five years.

Combination of work experience, formal education, seminars, and association and community involvement.

Organization: American Watchmakers Institute
3700 Harrison Avenue Cincinnati, OH 45211 (513) 661-3838
Contact: Jim Lebic, Technical and Educational Service Manager

System has been operating since 1960 with 20 certified and 6,000 members.

A written and performance test is administered by the institute. The performance test requires the repair of a watch or clock. A total of five different certifications are awarded, three for watchmakers and two for clockmakers.

Organization has no educational prerequisites. Although the institute provides classes, participation is not required to take the test.

There are two certification levels for watchmakers and clockmakers based on skill level. The third type of watchmaker certification is for electronic watch repair.

The Institute cooperatively develops training curriculum with watchmaking schools.

Organization: National Plastercraft Association
3910 Lamer-Miller Road New Albany, IN 47150 (812) 944-7960
Contact: Pat Ferguson

System has been operating for eight years with 40 per year certified and estimated 70 members.

The association administers written and performance tests (painting ability). A teaching manual and instructive seminars are also provided.

To apply, one must be a wholesaler or retailer and a member of the association.

There are three levels (basic, intermediate and master) and three different tests administered.

Organization: National Vehicle Leasing Association
P.O. Box 34028 Los Angeles, CA 90034 (310) 838-3170
Contact: Catherine Sparicino

System has been operating since 1983 with 140 certified and 500 members.

The association operates a two-year classroom study program consisting of four segments. To be certified, one must pass the written test administered after each segment and complete an eleven page personal data form concerning the applicant's professional involvement in the industry.

To apply for the program one must have 18 months experience in the auto leasing industry and abide by the association's code of conduct.

Organization: Certified Auctioneers Association
8880 Ballentine Overland Park, KS 66214 (913) 541-8115
Contact: Ann Wood, Executive Director

System has been operating since 1976 with 1,400 certified and 1,000 members.

The association operates a three-year institute invoiving one week per year of instruction. Applicants must pass a written exam subsequent to each one-week course to be invited back for the next year. In addition to the test, applicants must conduct a minimum of five auctions each year and complete an auction summary report.

To apply, one must be at least 21 years old and have a high school diploma, two years experience, and have conducted at least ten auctions in the prior two years, and been licensed for at least two years, if from a state requiring licensing.

The certification process described above is geared toward high-level decision makers in auction companies. A lower level certification is offered to individuals involved in real estate auctions.

Many states require auctioneers to be licensed. In some states, course completion satisfies continuing education requirements.

Organization: Associated Locksmiths of America
3003 Live Oak Street Dallas. TX 75204 (214) 827-1701
Contact: Shannon Smith

Programs been operating since 1986 with 9,854 members. Approximately 3200 individuals are currently certified.

The organization provides three levels of certification for locksmiths: certified registered locksmith (CRL), certified professional locksmith (CPL) and certified master locksmith (CML). A written test is administered to applicants. To become a CRL, one must pass the mandatory section of the exam and two elective sections. To become a CPL, one must be a CRL and pass twelve additional elective sections. To become a CML, one must be a CPL and pass nine additional elective sections. The organization provides a study guide and instructive seminars at its conferences for those interested in taking the exam. Organization has no educational prerequisites.

Three levels as described above - CRL, CPL and CML.

Some states do require the certification of locksmiths, but many have their own process.

Organization: American Gem Society
5901 W. Third Street Los Angeles, CA 90036 (213) 936-4367
Contact: Lisa Horts

To become a certified gemologist one must: take a course developed by the society to become a registered jeweler/supplier; work one year as a registered jeweler/supplier for a member firm; and complete the graduate degree program offered by the Gemological Institute of America (either correspondence or on-site).

To become a certified gemologist appraiser one must: work for a member firm
be a certified gemologist; take two seminars; pass a written exam; and submit examples of appraisal work for evaluation.

To retain either certification, one must pass an exam each year.

The society developed the class required to become a registered jeweler/supplier which is offered by the Gemological Institute of America.

Organization: Diamond Council America
9140 Ward Parkway Kansas City, MO 64114 (816) 444-3500
Contact: Beth Panther

System has been operating for 46 years with 1,100 certified diamontologists, 250 gemologists, 75 retail members and 25 associate members.

The council manages two certification programs: guild gemologist and certified diamontologist. The gemologist program involves a seven-part home-study course, each segment of which is followed by an exam. The diamontologist program is an eight-part home-study program with eight exams.

To participate in the home-study program one must work for a member firm and possess a high school diploma.

Organization: American Institute of Organbuilders
P.O. Box 130982 Houston, TX 77219 (713) 529-2212
Contact: Howard Maple, Executive Secretary

System has been operating for 10 years with 40 certified journeymen, 20 masters and estimated 300 members.

The institute manages an apprenticeship program for organbuilders and awards certificates for journeyman and master organbuilders. To become a journeyman organbuilder, one must pass a written test. To become a master organbuilder one must both pass the same exam (a higher score is required) and submit working drawings.

To take the exam to become a journeyman, one must have three years of experience and a high school diploma. To take the exam to become a master. one must have five years experience and a high school diploma.

The only two levels are journeyman and master. The institute is considering awarding specialist certificates for specific skills within the organbuilding profession.

Organization: Piano Technicians Guild
3930 Washington Kansas City, MO 64111 (816) 753-7747
Contact: Larry Goldsmith, Executive Director

Programs been operating since 1957 with 2,360 certified and estimated 3,900 members.

The guild certifies as registered piano technicians those individuals who score 80% or more on each part of a three-part exam. The exam includes a written section, a technical section and a tuning section. The guild offers technical classes at its annual convention. Local chapters and regional areas offer seminars.

To take the test one must be an associate member of the guild.

Organization: American Machine Tool Distributors Association
1335 Rockville Pike Rockville, MD 20852
Contact: Barbra Laird

The organization offers a certification program based on education, work experience, and a written examination. A program for recertification is being developed.

No written examinations were administered in 1991.

The minimum total fee to obtain certification is $750.00.

Some certification activities are contracted out. The certification body is part of an association, with administrative independence.

Organization: American Society for Photogrammetry and Remote Sensing
5410 Grosvenor Lane, Suite 450 Bethesda, MD 20814-2160
Contact: Mindy Saslaw

The organization offers three certification programs, based on education and work experience. Recertification requires an active practice in the specialty, continuing education, and an advancement of the body of knowledge during a 5-year period.

The minimum total fee for certification is $100.00. The fee for recertification is $125.00.

The certification operations are conducted in-house. The certification body is part of an association, with administrative independence.

Organization: Entomological Society of America
9301 Annapolis Road, Suite 300 Lanham, MD 20706
Contact: Karen Yoder

The organization offers 17 certification programs, based on education, work experience, and written examination. Recertification requires 120 CE hours during a 3-year period.

In 1991, 17 written examinations were administered.

The minimum total fee to obtain certification is $115.00. The written examination fee is $65.00. The recertification fee is $25.00. There is an annual fee of $65.00.

The certification operations are conducted in-house. The certification body is part of an association, with administrative independence.

Organization: Institute of Packaging Professionals
481 Carlisle Drive Herndon, VA 22070-4823
Contact: Kathleen L. Deeney

The organization offers a certification program based on education, work experience, and a written examination. Recertification requires either an examination or the accumulation of points for service within the packaging community during a 5-year period.

In 1991, approximately 100 written examinations were administered.

The minimum total fee to obtain certification is $75.00. The fee for recertification is $60.00.

The certification operations are conducted in-house. The certification body is part of an association, with administrative independence.

Organization: Instrument Society of America
P.O. Box 12277 Research Triangle Park, NC 27709
Contact: Douglas Kolb

The organization offers a certification program based on education, work experience, and a written examination. A recertification program is being developed based on a 3-year period.

Certification testing started in 1992.

The written examination fee is $210.00 ($160 for assn. member). The recertification fee is $175.00.

Most certification activities are contracted out. The certification body is part of an association, with administrative independence.

Organization: National Parking Association
1112 16th Street, NW, Suite 300 Washington, DC 20036
Contact: David Cotter

The organization offers a certification program based on a written examination. A recertification plan is being developed. This program is starting in 1993.

Some certification activities will be contracted out. The certification body is part of an association, with administrative independence.

Organization: National Society of Professional Surveyors/American Congress on Surveying and Mapping
5410 Grosvenor Lane, Suite 100 Bethesda, MD 20814
Contact: Patricia Canfield

This organization offers a certification program based on education, work experience, and a written examination. Recertification requires a re-examination at the end of a 5-year period.

In 1991, 127 written examinations were administered.

The fee for the written examination is $70.00. There is an annual fee of $15.00.

Some certification activities are contracted out. The certification body is part of an association, with administrative independence.

Organization: Conference of Funeral Service
P.O. Box 497 Washington, IN 47501-7887 (812) 254-7887
Contact: Sharon Rowley

System has been operating 40 - 50 years. Membership is 500.

The organization offers certification based on education and written examination.

Organization: National Association of Professional Engravers
21010 Center Ridge Rd. Cleveland OH 44116 (216) 333-7417
There are 150 organization members.

Organization offers two levels of certification, professional engraver and master engraver. Both programs are new in the last two years and no certifications have as yet been issued.

For the professional level credential 48 hours of training is required; for the master the requirement is 60 hours.

Organization: National Glass Association, (NGA) 8200 Greensboro Dr. McLean, VA 22102 (703) 442-4890
Contact: Linda Barnett

Context: NGA has an education program for owners and managers of the industry that has been developed in concert with Georgetown University that is spread out over three summers for approximately a week each year. CEU's are provided at the end of the third year. NGA has also focused educational efforts on the technicians. For several years the organization provided educational materials in a competency-based and task-oriented format for the training of glaziers to cover three years of craft training. The Wheels of Learning (as the training modules are called) include both student and instructor materials and is cost members of NGA only $55 for students and $75 for instructors material.

However, the members of the Association felt that just the training material were not sufficient for a variety of reasons. In order to help protect members against possible liability threats the NGA has been promoting skill certifications for two parts of the industry; auto glass installation and glaziers. These efforts are recent occurrences in the past three years.

There are two certification programs. One for the Auto Glass technicians that has three levels ranging from entry to masters level and a minimum of six months work experience required for technician and at least five years of experience for the master level. There are progressively more difficult exams that must be passed for each level recertification required after three years. For the glazier program there are also three levels from entry to mastery/supervisory but in addition there are three areas of specialty (curtainwall, storefront, and interior/residential glazing.

Assessment Process: NGA has developed joint agreements with the Professional Examination Service and the Drake Training & Technologies to respectively develop and administer the tests that are now all computer aided/readable.

C. ACCREDITATION ORGANIZATIONS

Organization: Accrediting Council for Continuing Education and Training, (ACCET) 600 East Main St. Suite 1425, Richmond Va. 23219 (804) 780-0821

Contact: Tim Chase Accreditation Coordinator

Context: ACCET was established in 1974 for the sole purpose of administering an accreditation function within the broadly defined function of continuing education and training. It is recognized by the U.S. Department of Education. It's roots have been in the higher education community but the organization notes there is an increasing number of business related associations that are becoming involved with this form of accreditation. Trade and professional associations, corporate training departments, labor union programs, private career schools, and public affairs and cultural societies are an example of types of organizations that can have their programs recognized by the organization. The programs that have been accredited provide training in over 1,000 locations and over 800,000 adults were served in 1992.

ACCET only accredits institutions providing non-collegiate continuing education training programs which are not authorized to award degrees of any type.

ACCET does not grant the Continuing Education Unit (CEU) which is in the public domain and may be granted by any educational organization without the permission of any other body. By accepted definition, the CEU is "ten contact hours of participation in an organized continuing education experience under responsible sponsorship, capable direction, and qualified instruction.

Programs consisting solely of one-way, non-interactive communications, such as audiovisual presentations, or home study are not eligible.

Organization: American Medical Association (AMA)

Address and Telephone: 515 North State St. (312) 464-4660

Contact: Wallace G. Clark, Jr. EdD

Context: Since its founding in 1847, the AMA has been involved in education issues. For more than 50 years, a portion of that attention has focused on the allied health occupations. Since 1976 there has been a Committee on Allied Health Education and Accreditation (CAHEA) recognized by COPA and U.S. Dept. of Education that focuses its attention on 26 allied health occupations, many of which have developed in the last 15-20 years.

Partners: CAHEA collaboration with more than 50 national organizations comprises the largest accrediting consortium in the U.S. The common denominator of the consortium is the adoption of the *Essentials*, or the nationally accepted education standards.

There are 20 review committees, evaluating 2800 programs sponsored by more than 1500. The accreditation guidelines have been revised every two to four years since 1981.

(Material is available by type of institutions, occupations, and that can be inserted is desired.)

The *Essentials* have a program evaluation component that requires programs to collect qualitative and quantitative information regarding the program graduates, and to demonstrate an ongoing evaluation of outcomes consistent with graduate competencies specified by the educational program. The sources of data may vary and can include surveys of graduates and employers, data on the evaluation of student performance on the national certifying exam and other nationally recognized standardized tests.

Additionally there is a requirement for a systematic process to consult with employers, preceptors, students and graduates to validate curriculum.

CAHEA provides a range of centralized services including several data bases, some of which collect data on tuition costs and degrees/awards granted by accredited programs, enrollment patterns, employment compensation, career retention, etc. This supply side data is useful for making work force projections -- if the occupation is one accredited by CAHEA.

Organization: American Society of Landscape Architects. The affiliate is the Landscape Architectural Accreditation Board (LAAB)

Address and Telephone: 4401 Connecticut Ave. NW, Fifth Floor, Washington D.C. 20008-2302 (202) 686-2752

Contact: Ron Leighton, Education Manager

Purpose: LAAB is recognized by COPA and USDOED for BA and MA degreed programs. The material sent makes no reference to any relationship to certification programs.

Organization: Computing Sciences Accreditation Board, Inc.

Address and Telephone: Suite 209 Two Landmark Square, Stanford, CT 06901, (203) 975-1117

Contact: Patrick M. LaMalva, Executive Director

Context: Grants accreditation for four year BA programs. Member of COPA and recognized by U.S. Dept of Ed. CSAB policies note that it prefers to minimize the number of specially designated programs and favors broad basic programs so that students can take advantage of several opportunities. It seeks to avoid applying minimum standards in a way that would discourage well-planned experimentation.

The material sent makes no reference to any relationship to certification programs.

Organization: American Dental Association, Commission on Dental Accreditation

Address and Telephone: 211 E.Chicago Ave. Chicago, Ill. 60611-2678, (312) 440-2500

Contact: Lois L. Schuhrke, Asst. Director of Commission

Purpose: The Commission is responsible for accrediting 14 disciplines that range from the paraprofessional type of occupation, such as dental assisting, to advanced specialty education programs for dentists. The Commission recognizes more than 1300 educational institutions and professional programs. It is a member of COPA and is recognized by DOE.

Almost the entire range of occupations is linked to state licensure requirements.

Who is eligible: For the purpose of the Commission's work only the educational institution. All programs must be reviewed every seven years except for programs in the oral and maxillofacial surgery which must be reviewed every five years. There is a requirement for some form of clinical experience in accreditation process.

History: Dental education accreditation was initiated in the early 1900s. Chicago is the home of many of the organizations concerned with the industry, many housed in the same building as the American Dental Association. Over the years sub-disciplines have been added to the network, for example, dental hygiene was added in 1951 and

the Dental Lab tech in 1958. Since 1958, 16,000 have applied for Lab tech certification and 11,000 have received recognition.

In the decade of the 1980's there has been a steady decline of graduates in allied dental education programs (dental assisting, hygiene, and laboratory technicians) with a slight turnaround in 1991. A cursory review of the Commission's statistics indicates there is roughly a 50% drop from initial enrollment to graduation.

Partners: The Commission has 20 members that include representatives of the Dental Association, Dental Examiners, Dental Schools, Recognized Dental Specialties (positions rotate every two years, Dental Assistants, Dental Hygienists', Dental Laboratories, general public and students.

The Commission publishes a substantial amount of career guidance and licensure information and performs a range of public information services and studies for its membership organizations.

Organization: New England Association of Schools and Colleges, Commission on Vocational, Technical Career Institutions (NEASC)

Address and Telephone: The Sanborn House, 15 High Street, Winchester, MA, 01890 (617)729-6762

Contact: Richard E. Mandeville, Director of the Commission

Context: NEASC is one of two regional accreditation bodies that have a standing commission dedicated to both secondary and post-secondary vocational, technical and career institutions. It has accredited 106 colleges and technology centers throughout New England.

As a matter of policy, each institution must have a technical advisory council for each occupation curriculum in the institution. These committees are typically made up of 8-10 representatives of business who can participate in curriculum development on an on-going basis.

If the program is one typically requiring certification or licensure, the program must fulfill the minimum requirements to be eligible for their graduates to sit for the required examinations or to meet other requirements. The institution must provide evidence that a reasonable proportion of graduates become certified or licensed upon graduation.

APPENDIX A

SURVEYED SKILLS CERTIFICATION PROGRAMS BY INDUSTRY AND OCCUPATIONS

Appendix A

Surveyed Skills Certification Programs by Industry and Occupation

AGRICULTURE, FORESTRY AND FISHING SKILLS CERTIFICATION PROGRAMS

	Association Name	Number Certified	Industry Name	Occupation group	Occupation Name
1	American Society of Farm Managers & Rural Appraisers	1602	Agriculture	Executive, Administrative and Managerial	Farm Managers

MINING INDUSTRY SECTOR SKILLS CERTIFICATION PROGRAMS

	Association Name	Number Certified	Industry Name	Occupation group	Occupation Name
2	American Association of Professional Landsmen	No report	Petroleum Extraction	Professional Specialty	Property Management

CONSTRUCTION
SKILLS CERTIFICATION PROGRAMS

	Association Name	Number Certified	Industry Name	Occupation Group	Occupation Name
3	Society of Cost Estimating	1,600	Construction	Executive, Administrative and Managerial	Cost Estimators
4	Association of Cost Engineers	500	Construction	Executive, Administrative & Managerial	Cost Estimators
5	Automatic Fire Alarm Association	840	Construction	Precision Production, Craft & Repair	Alarm System Installers
6	National Fire Sprinkler Association	2,000	Construction	Precision Production, Craft, and Repair	Sprinkler mechanics& installers
7	Decorative Laminate Products Association	No report	Construction	Precision Production, Craft & Repair	Laminated Surfaces Installers
8	International Masonry Institute	No report	Construction	Precision Production, Craft, and Repair	Bricklayers
9	National Plastercraft Association	70	Construction	Precision Production, Craft, and Repair	Plasterers
10	International Brotherhood of Electrical Workers Joint Training Committee	200,000	Electrical Construction	Precision Production, Craft, and Repair	Electricians
11	Associated General Contractors	No report	Construction	Precision Production, Craft, and Repair	Various Construction Trades

TRANSPORTATION SKILLS CERTIFICATION PROGRAMS

12	Association Name	Number Certified	Industry Name	Occupation Group	Occupation Name
13	American Association of Airport Executives	330	Air Transport	Executive, Administrative. & Managerial.	Airport Administrators
14	Seafarers Union	No report	Water Transport	Operators, Fabricators and Laborers	Ship Captains and Mates

MANUFACTURING SECTOR SKILLS CERTIFICATION PROGRAMS

	Association Name	Number Certified	Industry Name	Occupation group	Occupation Name
15	National Association of Printers and Lithographers	No report	Printing	Executive, Administrative & Managerial	Printing Company Managers
16	Society of Small Craft Desighers	No report	Various Manufacturing	Professional Specialty	Boat Designers
17	International Society of Certified Electronic Technicians	35,000	Various Manufacturing (also in Services & Wholesale Trade)	Precision Production, Craft & Repair	Electronic Technicians
18	In-Plant Management Association	500	Various Manufacturing	Executive, Administrative and Managerial	Manufacturing Plant Managers

MANUFACTURING SECTOR
SKILLS CERTIFICATION PROGRAMS

19	American Welding Society	42,000	Industrial & Transport Equipment (also Services, Auto & Misc Repair)	Operators, fabricators & laborers	Welders
20	Graphic Arts Technical Foundation	6,500	Printing	Operators, fabricators & laborers	Printing Machine Operators
21	Inst. of Packaging Professionals	No report	Various Manufacturing	Professional Specialty	Materials Packaging Specialist
22	Forging Industry Assoc.	No report	Foundries	Operators, fabricators & laborers	Forging Machine Operators
23	National Screw Machine Products Assoc.	No report	Screw Machine Products	Precision Production, Craft & Repair	Machinist
24	Printing Industries Assoc.	No report	Printing	Operators, fabricators & laborers	Printing Press Operators

COMMUNICATIONS AND UTILITIES
SKILLS CERTIFICATION PROGRAMS

	Association Name	Number Certified	Industry Name	Occupation Group	Occupation Name
25	Radio Advertising Bureau	3,730	Radio/TV Broadcasting	Executive, Administrative and Managerial	Marketing Mgrs.
26	National Assoc. of Radio and Telecommunication Engineers	7,500	Radio /TV Broadcasting	Technicians & Related	Broadcast Technicians

WHOLESALE TRADE
SKILLS CERTIFICATION PROGRAMS

	Association Name	Number Certified	Industry Name	Occupation Group	Occupation Name
27	National Food Brokers Association	280	Wholesale Groceries	Marketing & Sales	Sales Management

RETAIL TRADE
SKILLS CERTIFICATION PROGRAMS

	Association Name	Number Certified	Industry Name	Occupation Group	Occupation Name
27	National Association of Truck Stop Operators	No report	Food Service	Exec. Admin. & Managerial	Food Service Managers
29	Education Foundation of Nat'l Restaurant Association	500	Eating & Drinking Places	Exec. Admin. & Manger	Food Service Supervisors
30	American Culinary Federation	6,000	Eating & Drinking Places	Exec. Admin. & Manger	Food Service Supervisors
31	National Association of College Stores	166	Book Stores	Executive, Administrative & Managerial	Bookstore Managers
32	American Gem Society	879	Jewelers	Precision Production, Craft & Repair	Jewelers
33	Diamond Council America	1,100	Jewelers	Precision Production, Craft & Repair	Jewelers
34	National Electronic Sales and Service Dealers Association	35,000	Electronic Repair, Retail Appliance Stores	Precision Production, Craft & Repair	Electronic Equipment Repairers
35	National Association of Retail Dealers	No report	Household Appliance Sales	Precision Production, Craft & Repair	Appliance Repair Technicians

FINANCE, INSURANCE AND REAL ESTATE SKILLS CERTIFICATION PROGRAMS

	Association Name	Number Certified	Industry Name	Occupation Group	Occupation Name
36	American Bankers Assoc.	No report	Banking	Executive, Administrative and Managerial	Management
37	Assoc. for Bank Cost and Management Accounting	25	Banking	Prof. Specialty	Accountants
38	Inst. for State Credit Union Examination	No report	Banking	Executive, Administrative and Managerial	Financial Managers
39	Assoc. for Investment Mgt. and Research	17,000	Finance & Insurance	Executive, Administrative and Managerial	Financial Managers
40	Mortgage Bankers Association	484	Finance, Investment	Mgmt. Support	Underwriters
41	Inst. of Financial Education	No report	Finance, Insurance	Marketing & Sales	Securities Sales
42	Professional Insurance Agents	3,000	Insurance	Marketing & Sales	Insurance Sales Agent
43	Certified Claims Professional Accreditation Council	200	Insurance	Admin. Support	Claims Adjusters
45	National Assoc. of Certified Fraud Examiners	6,000	Insurance	Admin. Support	Insurance Fraud Examiners
46	Casualty Actuarial Society	1,928	Insurance	Prof. Specialty	Actuaries
47	Society of Actuaries	9,400	Insurance	Prof. Specialty	Actuaries
48	Inst. of Real Estate Mgt.	500	Real Estate	Executive, Administrative and Managerial	Property Managers
49	Nat'l. Uniform Certification of Building Operators	No report	Real Estate (Building Operators)	Executive, Administrative & Managerial	Building Managers

FINANCE, INSURANCE AND REAL ESTATE
SKILLS CERTIFICATION PROGRAMS

50	Building Owners and Managers	5,000	Real Estate	Executive, Administrative and Managerial	Property Manager
51	National Apartment Association	900	Real Estate	Executive, Administrative and Managerial	Property Manager
52	Natl. Property Mgmt. Association	3,000	Real Estate	Exec., Admin. & Managerial	Property Managers
53	Natl. Assoc. of Master Appraisers	7,500	Real Estate	Marketing & Sales	Appraisers
54	Society of Appraisers	4,000	Real Estate	Marketing & Sales	Appraisers
55	Association of Real Estate Appraisers	2,000	Real Estate	Marketing & Sales	Appraisers
56	Association of Certified Appraiser	5,000	Real Estate	Marketing & Sales	Appraisers
57	Commercial Investment Real Estate Council	3,500	Real Estate	Marketing & Sales	Real Estate Sales
58	American Society of Real Estate Counselors	1,000	Real Estate	Marketing & Sales	Real Estate Sales
59	Real Estate Brokerage Council	20,000	Real Estate	Marketing & Sales	Real Estate Sales
60	Real Estate Brokerage Council	5,300	Real Estate	Marketing & Sales	Real Estate Sales
61	Realtors Land Inst.	853	Real Estate	Marketing & Sales	Real Estate Sales

SERVICES
SKILLS CERTIFICATION PROGRAMS

	Association Name	Number Certified	Industry Name	Occupation Group	Occupation Name
62	Automotive Service Association Management Institute	No report	Auto Service and Repair	Executive, Administrative and Managerial	Managers & Administrators
63	National Auto Technology Education Foundation	No report	Auto Repair also under retail trade (auto dealers)	Precision Production, Craft & Repair	Automotive Mechanics
64	Association of Diesel Specialists	No report	Automotive Repair	Precision Production, Craft & Repair	Vehicle Engine Mechanics
65	International Association of Business Communicators	No report	Business Services (also in Mfg. & other)	Executive, Administrative and Managerial	Public Relations Managers
66	American Collectors Assoc.	4,000	Business Services	Executive, Administrative and Managerial	Collection Agency Managers
67	Professional Photographers of America	1,650	Business Services	Professional Specialty	Photographers
68	National Council for Interior Design Qualification	No report	Business & Engineering Services (also Retail Trade)	Professional Specialty	Interior designers
69	Association of Progressive Rental Organizations	No report	Business Services	Executive, Administrative and Managerial	Equipment Rental Manager
70	Nat'l. Association of Independent Fee Appraisers	No report	Business Services.	Marketing & Sales	Appraiser
71	International Society of Appraisers	1,500	Business Services.	Marketing & Sales	Appraiser

SERVICES
SKILLS CERTIFICATION PROGRAMS

72	Inst. of Internal Auditors	18,000	Business Services	Executive, Administrative & Managerial (support)	Accountants and Auditors
73	Accredited Review Appraisers Council	1,000	Business Services	Marketing & Sales	Appraisers
74	Association of Machinery and Equipment Appraisers	281	Business Services	Marketing & Sales	Appraisers
75	Inst. of Business Appraisers	No report	Business Services	Marketing & Sales	Appraiser
76	American Association of Dental Consultants	28	Business Services	Executive, Administrative and Managerial	Management Analyst
77	Executive Protection Institute	No report	Business Services	Service	Protection Service, n.e.c.
78	American Institute of Certified Public Accountants	305,000	Business Services	Executive, Administrative & Managerial (support)	Accountant
79	Public Relations Society of America	15,000	Business Services	Executive, Administrative and Managerial	General Managers.
80	National Society of Public Accountants	No report	Business Services (Accounting)	Executive, Administrative & Managerial	Accountants
81	Inst. of Certified Management Accountants	No report	Business Services	Executive Administrative & Managerial	Accountant
82	Organization Development Inst.	No report	Business Services	Executive, Admin. and Managerial	Managers & Management Analysts
83	Certified Auctioneers Association	No report	Business Services	Marketing & Sales	Auctioneers

SERVICES
SKILLS CERTIFICATION PROGRAMS

84	National Association of Personnel Services	8,400	Business Service (Personnel Supply)	Executive, Administrative and Managerial	Personnel Managers
85	Society for Industrial Security	3,000	Business Services	Service	Investigators
86	National Vehicle Leasing Association	140	Business Services	Executive, Administrative and Managerial	managers
87	Chimney Safety Inst.	3,118	Business Services (Building Maintenance Services)	Service Occupations	Chimney Cleaners & Inspectors
88	International Association of Lighting Management Companies	82	Business Services	Technicians & Related	Lighting technicians
89	American Consultants League	No report	Business Services	Executive, Administrative and Managerial	Management Consultants
90	Inst. of Management Consultants	1,780	Business Services	Executive, Administrative and Managerial	Management Analysts (Consultants)
91	American Society of Landscape Architects	2,500	Engineering & Architectural Services	Professional Specialty	Landscape Architects
92	American Society for Photogrammetry and Remote Sensing	No report	Engineering Services	Professional Specialty	engineers
93	Int'l. Board for Lactation Consultant Engineers	No report	Engineering Services	Professional specialty	Lactation Engineers
94	Society of Plumbing Engineers	2,000	Engineering & Architectural Services	Professional Specialty Occupations	Mechanical Engineers

SERVICES
SKILLS CERTIFICATION PROGRAMS

95	Motorcycle Safety Foundation	20,000	Educational Services	Professional Specialty	Motorcycle Safety Instructors
96	National Board of Certified Counselors	18,000	Education Services	Professional Specialty	Counselors
97	National Association of Administrators of Homes for the Aging	No report	Health Services (Nursing Facilities)	Executive, Administrative and Managerial	Nursing Home Administrators
98	American College of Health Care Administrators	No report	Health Services	Executive, Admin. and Managerial	Management Medicine and Health
99	American Medical Directors Association	No report	Health Services	Executive, Administrative and Managerial	Managers, Medicine and Health
100	National Board Dental Hygiene Examination	No report	Health Services (Dentist Offices)	Technicians & Related Support	Dental Hygienist
101	Dental Assisting National Board	26,186	Health Services (Dentist Offices)	Technicians & Related Support	Dental Assistant
102	American Association for Laboratory Animal Science	1,895	Health Services	Technicians & Related Support	Laboratory Technicians
103	National Board for Certification of Dental Laboratories	9,000	Health Services (Dental Laboratories)	Technicians & Related Support	Dentinal Lab Technicians
104	American Board of Clinical Chemistry	No report	Health Services (Various)	Technicians & Related Support	Laboratory Technicians
105	Academy of Clinical Mental Health Counselors	2,500	Health Services	Professional Specialty	Psychologists
106	Association of Psychological Types	4,000	Health Services & Education Services	Professional Specialty	Psychologists
107	American Medical Technologists	No report	Health Services	Technicians & Related	Medical Technicians

SERVICES
SKILLS CERTIFICATION PROGRAMS

108	National Commission for Certification of Acupuncturists	3,000	Health Services	Technicians & Related	Acupuncturists
109	American Medical Association Committee on Allied Health Education		Health Services	Various Professional Specialty & Technicians	Various allied health therapists and technologists
110	American Physical Therapy Association	No report	Health Services	Professional Specialty	Physical Therapists
111	National Inst. for Certification of Health Care Sterile Processing and Distribution Personnel	No report	Health Services	Operators, Fabricators, Laborers	Sterile materials processing
112	Academy of Clinical Mental Health Counselors	2,500	Health Services	Professional Specialty	Psychologists
113	Amer. Board of Opticianry	No report	Health Services	Technicians	Opticians
114	American Speech, Language and Hearing Association	No report	Health Services	Professional Specialty	Speech & Hearing Therapists
115	Board for Orthodontic Certification	No report	Health Services	Technicians	Health Technicians, n.e.c.
116	National Association of Contact Lens Examiners	No report	Health Services	Technicians	Health Technicians, n.e.c.
117	Entomological Soc. of Amer.	No report	Health Services	Professional Specialty	Entomologists
118	Nat'l Association of Alcohol and Drug Counselors	No report	Health Care, Social Services	Professional Specialty	Counselors
119	Building Service Contractors Association	500	Hotels, Business Services, Health Svcs.	Service	Building Cleaning Supervisors
120	National Executive Housekeepers Association	No report	Hotels, Business Services (buildings), & Hospitals	Service Occupations (Cleaning & Building Serv.)	Institutional Housekeepers

SERVICES
SKILLS CERTIFICATION PROGRAMS

121	Cleaning Mgt. Inst.	1,700	Hotels, Business Services	Services	Janitors & Cleaners
122	National Assoc. of Legal Secretaries	3,340	Legal Services	Administrative Support	Secretaries
123	Club Managers Assoc. of Am.	1,000	Membership Organization	Executive, Administrative and Managerial	Food Service Mgmt.
124	American Chamber of Commerce Executives	600	Membership Organization	Executive, Administrative and Managerial	Management
125	American Watchmakers Institute	No report	Misc. Repair Services (also in Retail Trade)	Precision Production, Craft & Repair	Watchmakers
126	Electronics Technicians Association	No report	Misc Repair Services	Technicians & Related Support	Electronic Technician
127	International Electrical Testing Association	No report	Misc Repair Services	Technicians & Related Support	Electronic Technician
128	Assoc. of Specialists - Cleaning and Restoration	635	Misc. Repair Services	Precision Production, Craft & Repair	Art and Antique Restorers
129	Nat'l. Assoc. of Professional Board Instrument Repair	No report	Misc. Repair Services	Precision Production, Craft & Repair	Musical Instrument Repairers
130	Am. Inst. of Organbuilders	60	Misc. Repair Services	Precision Production, Craft & Repair	Musical Instrument Repair
131	Piano Technician Guild	2,360	Misc. Repair Services	Precision Production, Craft & Repair	Musical Instrument Repair
132	Assoc. of Home Appliance Manufacturing	No report	Misc. Repair Services	Precision Production, Craft and Repair	Household Appliance Repair
133	Associated Locksmiths of America	3,238	Misc. Repair Services	Precision Production, Craft & Repair	Locksmiths

SERVICES
SKILLS CERTIFICATION PROGRAMS

134	Institute for Boilers and Radiators Training	44,000	Misc. Repair Services (Heating equipment)	Precision Production, Craft & Repair	Boilermakers, heating/AC Installers
135	National Association of Institutional Linen Management	No report	Personal Services (Laundries)	Executive, Administrative and Managerial	Managers, n.e.c.
136	National Swimming Pool Foundation	28,000	Recreation Services	Service	Swimming Pool Maintenance Workers
137	American Swimming Coaches Association	3,000	Recreation Services, Education Services		Teachers, Coaches
138	American Camping Association	400	Recreational Services	Executive, Administrative and Managerial	Recreation Facility Managers
139	National Association of RV Parks	No report	Recreational Services	Executive, Administrative and Managerial	Recreation Facility Managers.
140	American Farriers Association	No report	Recreation Services (Horse Racing)	Precision Production, Craft & Repair	Farriers
141	Golf Course Superintendents Association	12,000	Recreation Services	Agriculture & Related	Groundskeepers Supervisors
142	National Council for Therapeutic Recreation Certification	12,000	Social Services (Vocational Rehabilitation)	Professional Specialty	Therapists, n.e.c.
143	Commission on Rehabilitation Counselor Certification	2,000	Social Services (Vocational Rehabilitation)	Professional Specialty	Vocational Counselors
144	Board of Rehabilitation Certification	35,000	Social Services (Vocational Rehabilitation)	Professional Specialty	Occupational Therapists

GOVERNMENT SECTOR SKILLS STANDARDS PROGRAMS

	Association Name	Number Certified	Industry Name	Occupation Group	Occupation Name
145	American Sociological Association	No report	Government (also in Educational Services)	Professional Specialty	Sociologists
146	American Planning Association	1,000	General Government	Professional Specialty	Urban & Regional Planners
147	American Safety Services Association	4,000	Government	Professional Specialty	Traffic Engineers
148	National Public Service Accreditation Board	300	General Government	Executive, Administrative and Managerial	Government Administration

NON-SPECIFIC INDUSTRY SKILLS CERTIFICATION PROGRAMS

	Association Name	Number Certified	Industry Name	Occupation Group	Occupation Name
149	Institute of Pension Administration	150	Various	Executive, Administrative and Managerial	Pension/Benefits Administrators
150	Board of Certified Safety Professionals	6,500	Mining, Manufacturing, Construction, Transportation	Professional Specialty	Industrial Engineers
151	Mail Systems Management Association	56	Various	Admin. Support	Mail Clerks
152	Administration Management Society	1,000	Various	Executive, Administrative and Manage	Administrative Services Managers

NON-SPECIFIC INDUSTRY SKILLS CERTIFICATION PROGRAMS

153	Board of Certified Hazard Control Management	5,000	Mining, Manufacturing, Construction, Transportation	Executive, Administrative and Managerial	Management, n.e.c.
154	National Management Association	No report	Various	Executive, Administrative and Managerial	Managers
155	Treasury Management Association	No report	All Sectors	Executive, Administrative and Managerial	Financial Management
156	Association of Scientific Materials Managers	No report	All Sectors	Executive, Administrative and Managerial	Management
157	Personnel Management Association	No report	All Sectors	Executive, Administrative and Managerial	Personnel Managers
158	Contract Management Association	5,890	All Sectors	Executive, Administrative and Managerial	Managers
159	Institute of Certified Professional Managers	5,000	Various	Executive, Administrative and Managerial	Management
160	Project Management Institute	1,273	Various	Executive, Administrative and Managerial	Management
161	Human Resource Certification Institute	12,000	Various	Executive, Administrative and Managerial	Personnel Management
162	Expediting Management Association	300	Various	Administrative Support	Expediters

NON-SPECIFIC INDUSTRY SKILLS CERTIFICATION PROGRAMS

163	Sales and Marketing Executives International	219	Various	Executive, Administrative and Managerial	Sales Managers
164	American Payroll Association	2,500	Various	Administrative Support	Payroll Clerk
165	Inst. of Certified Records Managers	11,000	Various	Administrative Support	Records administration and management
166	Office Automation International	No report	Various	Administrative Support	Office Supervise
167	Professional Secretaries International	39,252	Various	Administrative Support	Secretaries
168	Computing Science Accreditation Board	No report	Various	Technicians & Related	Computer Programmers

APPENDIX B

MAJOR LICENSED OCCUPATIONS BY INDUSTRY CATEGORY

Two sources were used to develop this appendix: The Council on Licensure, Enforcement and Regulation, Issues in Professional Regulation (1991); the Council of State Governments and Joan Wills, Rambling Path for Certification of Skills (1992), Institute for Educational Leadership.

Appendix B
Major Licensed Occupations by Industry Category

Industry Category			
	Licensed Occupation	**Detailed Industry**	**Major Occupation Group**
Agriculture			
	Arborist	Forestry	Prof. Specialty
	Aviary	Livestock	Agricultural worker
	Beekeeper	Agricultural Production	Agricultural worker
	Commercial Fisherman	Fisheries	Agricultural worker
	Dairy processor	Dairies	Agricultural worker
	Farrier	Livestock	Agricultural worker
	Forester	Forestry	Prof. Specialty
	Pesticide Applicator	Agricultural Production	Agricultural Worker
	Agriculture Produce broker	Agricultural Production	Marketing & Sales
Mining			
	Geologist	various	Professional Specialty
	Health and Safety Inspector	Coal Mining (also in Manufacturing)	Precision Production, etc.
	Mine electrician	Coal Mining	Precision Production, etc.
	Mine foreman	Coal Mining	Exec., Admin. & Mgmt.
	Mine Inspector	Coal Mining	Precision Production, etc.

Appendix B
Major Licensed Occupations by Industry Category

Industry Category	Licensed Occupation	Detailed Industry	Major Occupation Group
Construction			
	Air Conditioning & Heating Contractor	General Construction	Exec., Admin. & Mgmt.
	Alarms Contractor	General Construction	Exec., Admin. & Mgmt.
	Alarms Installer	General Construction	Precision Production, etc.
	Asbestos Contractor	Gen. construction	Exec., Admin. & Mgmt.
	Asbestos Installer/Remover	General Construction	Precision Production, etc.
	Blaster	General Construction	Precision Production, etc.
	Building Inspector	General Construction (also government)	Precision Production, etc.
	Electrical Contractor	General Construction	Exec., Admin. & Mgmt.
	Electrician	General Construction	Precision Production, etc.
	General Contractor	General Construction	Exec., Admin. & Mgmt.
	High Pressure Pipe Fitter	General Construction	Precision Production, etc.
	Riggers & Hoising Engineers	General Construction	Precision Production, etc.
	Plumber	General Construction	Precision Production, etc.

Appendix B
Major Licensed Occupations by Industry Category

Industry Category			
	Licensed Occupation	**Detailed Industry**	**Major Occupation Group**
Manufacturing			
	Boiler Inspector	various	Precision Production, etc.
	Boiler Operator	various	Operators
	Chemist	various	Professional Specialty
	Food Process Worker	Food Processing	Operators, etc.
	Operating Engineer	various	Operators, etc.
	Refrigeration Engineer	various	Professional Specialty
	Refrigeration Technician	various	Technicians
	Industrial safety Hygienist	various	Professional specialty
Transportation			
	Airplane Pilot	Air Transport	Operators
	Truck Driver	Trucking	Operators
	Bus Driver	Bus lines	Operators
	Aircraft Mechanic	Air Transport	Precision Production, etc.
	Air Traffic Controllers	Government	Technicians, etc.
	Ship/Boat Pilots, Captains, Mates & Operators	Shipping	Operators

Appendix B
Major Licensed Occupations by Industry Category

Industry Category			
	Licensed Occupation	**Detailed Industry**	**Major Occupation Group**
Communications & Utilities			
	Radio/ TV Engineer	Broadcasting	Technicians
	Radio Transmitter Operator	Broadcasting	Technicians
	Nuclear Engineer	Utilities	Professional Specialty
	Nuclear Power House Operator	Utilities	Operators
Wholesale Trade	None identified		
Retail			
	Optician	Optical goods	Precision Production, etc.
	Pharmacist	Pharmacies	Professional Specialty
	Pharmacy Technician	Pharmacies	Service
	Hearing Aid Dealer / Fitter	Hearing Aids	Service

Appendix B
Major Licensed Occupations by Industry Category

Industry Category			
	Licensed Occupation	**Detailed Industry**	**Major Occupation Group**
Finance, etc.			
	Real Estate Sales Agent	Real Estate	Marketing
	Real Estate Broker	Real Estate	Marketing
	Cemetery Salesperson	Real Estate	Marketing & Sales
	Securities Sales Agent	Securities	Marketing
	Securities Broker	Securities	Marketing
	Financial Advisor	Financial Services	Marketing
	Real Estate Appraiser	Real Estate	Marketing
	Insurance Broker	Insurance	Marketing
	Insurance Agent	Insurance	Marketing
Services			
	Acupuncturist	Health Services	Professional Specialty
	Chiropractor	Health Services	Professional Specialty
	Mental Health Counselor	Health Services	Professional Specialty
	Dentist	Health Services	Professional Specialty
	Dental Assistant	Health Services	Technicians
	Dental Hygienist	Health Services	Technicians
	Dietitian	Health Services	Professional Specialty

Appendix B
Major Licensed Occupations by Industry Category

Industry Category			
	Licensed Occupation	**Detailed Industry**	**Major Occupation Group**
Services (continued)	Emergency Medical Technician	Health Services	Technicians
	Homeopath	Health Services	Professional Specialty
	Massage Therapist	Health Services	Service
	Medical Technologist	Health Services	Technicians
	Nuclear Medicine Technologist	Health Services	Technicians
	Licensed Practical Nurse	Health Services	Technicians
	Nurse Practitioner	Health Services	Professional Specialty
	Registered Nurse	Health Services	Professional Specialty
	Nursing Home Administrator	Health Services	Exec., Admin. & Mgmt
	Occupational Therapist	Health Services	Professional Specialty
	Occupational Therapy Assistant	Health Services	Technicians
	Osteopath	Health Services	Professional Specialty
	Physical Therapist	Health Services	Professional Specialty
	Physical Therapy Assistant	Health Services	Technicians
	Physician	Health Services	Professional Specialty

Appendix B
Major Licensed Occupations by Industry Category

Industry Category	Licensed Occupation	Detailed Industry	Major Occupation Group
Services (continued)	Physician Assistant	Health Services	Professional Specialty
	Podiatrist	Health Services	Professional Specialty
	Psychologist	Health Services	Professional Specialty
	Radiologic Technologist	Health Services	Technicians
	Radiation Therapy Tech.	Health Services	Professional Specialty
	Social Worker	Social Services	Professional Specialty
	Speech Pathologist	Education Services	Professional Specialty
	Professional Boxer	Entertainment	Professional Specialty
	Boxing Officials	Entertainment	Professional Specialty
	Casino worker	Entertainment	Sales Workers
	Chauffeur	Personal Services	Operators
	Design Consultants	Architectures & Engineering	Professional Specialty
	Exterminator	Business Services	Operators
	Elevator Mechanic/ Inspector	Business Services	Precision Production, etc.
	Driver Training Instructor	Education	Professional Specialty
	Guidance Counselor	Social Services	Professional Specialty

Appendix B
Major Licensed Occupations by Industry Category

Industry Category	Licensed Occupation	Detailed Industry	Major Occupation Group
Services (continued)	Lobbyist	Business Services	Exec., Admin, Mgmt. & Support
	Respiratory Therapist	Health	Professional Specialty
	Wrestler	Entertainment	Professional Specialty
	Wrestling Officials	Entertainment	Professional Specialty
	Marriage Therapist	Social Services	Professional Specialty
	Veterinarian	Health Services	Professional Specialty
	Veterinary Technician	Health Services	Technician
	Sanitarian	Health Services	Professional Specialty
	Nurse Midwife	Health Services	Professional Specialty
	Landscape Architect	Architecture & Engineering	Professional Specialty
	Polygraph Examiner	Business Services	Technician
	Land Surveyor	Architecture & Engineering	Professional Specialty
	Lawyer	Legal Services	Professional Specialty
	Architect	Architecture & Engineering	Professional Specialty
	Auctioneer	Business Services	Marketing
	Barber	Personal Services	Services

Appendix B
Major Licensed Occupations by Industry Category

Industry Category	Licensed Occupation	Detailed Industry	Major Occupation Group
Services (continued)	Hairdresser	Personal Services	Services
	Cosmetologist	Personal Services	Services
	Embalmer	Personal Services	Services
	Funeral director	Personal Services	Services
	Private Detective	Business Services	Services
	Civil Engineer	Architecture & Engineering	Professional Specialty
	Certified Public Accountant	Business Services	Exec., Admin. & Mgmt. Support
Government			
	Fire Inspector	Local Government.	Services (Protective)
	City Planner	Local Government	Professional Specialty
	Assessment Technician	Local Government	Administrative Support
	Assessor	Local Government	Professional Specialty
	Court Reporter	Local Government	Admin. Support
	Correction Officer	General Government	Service (Protective)
	Public Health Officer	various	Professional Specialty
	Teacher	State & Local Government	Professional Specialty
	Animal Control Officer	Local Government	Service (Protection)

The Institute for Educational Leadership
Center for Workforce Development
1001 Connecticut Ave., NW, Suite 310
Washington, DC 20036
Telephone (202) 822-8405
FAX (202) 872-4050